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COMPUTERWORLD

At a cybercrawl

Industry plans detours to outsmart Internet slowdown

By Mitch Wagner

The Internet is slowing down, and users and vendors are hustling to speed it up again.

Users such as Turner Broadcasting System, Inc. and Time Warner, Inc., for example, are laying down extra-high-speed connections to their World Wide Web sites. They are also hosting content on redundant, powerful servers to minimize delays.

Internet service providers, meanwhile, plan this year to increase capacity in nationwide backbones and add more modems and ports to their dial-in points-of-presence. They are also talking about starting fee-based premium services for business customers who need guaranteed fast throughput.

But even as Internet service providers and big Internet users struggle to keep up with demand, emerging technologies such as real-time video and audio are likely to put more of a strain on the system, experts said.

Doomsayers have been warning about an Internet "swamp-out" for a long time. But now ordinary users are joining the outcry. They say the slowdown isn't just coming — it's here.

"For a lot of the sites, especially those that make heavy use of graphics, things just look slow," said Percy Young, director of store systems at Burlington Coat Factory, Inc. in Burlington, N.J. "At the Adobe site, for instance, it

Cybercrawl, page 16

WorldCom turbocharges frame-relay standard

By Neal Weinberg

LDDS WorldCom, Inc., which introduced the first frame-relay service in 1991, ups the ante today when it offers a higher-speed version of the popular data transport, *Computerworld* has learned.

WorldCom will make its "fast frame" service commercially available, the company confirmed. Fast frame pushes the top-end speed of frame relay from T1, or 1.5M bit/sec. speeds, to 20M bit/sec. This will let data users extend their frame-relay networks instead of upgrading to Asynchronous Transfer Mode.

WorldCom has been selling high-

Frame relay, page 109

Fast forward

LDDS WorldCom announces high-speed frame relay

Typical frame relay: Up to 1.5M bit/sec., or T1 speed

WorldCom's high-speed frame relay: 6M, 10M and 20M bit/sec.

Purpose: For users with high-volume data requirements

User requirements: Upgrade equipment to T3 speeds

Sample pricing: A 200-node network with a 6M bit/sec. host port would cost $41,140 per month

Net Notes faithful will find a way

By Tim Ouellette

AT&T Corp. may be dumping its Network Notes on-line service, but loyal Notes users say they are determined to find other ways to deploy the groupware package across wide-area networks.

In a blow to IBM/Lotus, AT&T last week said it will drop its Network Notes service by midyear to focus on Internet offerings.

But Network Notes users exhibited a stiff upper lip, making it clear they'll carry on somehow. "We are going to use Notes more and extend the network internally ourselves," said Helen O'Connor, vice president of telecommunications at First Albany Corp. in Albany, N.Y.

The brokerage uses Network Notes to replicate Notes databases and send research information to its 30 branch offices in the Northeast. O'Connor said the company will look into building its own WAN.

TitleLink in Dallas, another Network Notes user, will continue to use Notes internally while it looks for other ways to distribute its Notes real estate application, said Jody-

Network Notes, page 109

Getting a piece of the Web

Insurers try out high-tech image

By Thomas Hoffman

"Don't think of us as some old, stodgy insurance company that's been around for over 150 years. We want to break that mold, cut loose and have some fun."

That statement, emblazoned on the home page of Aetna Life and Casualty Co.'s World Wide Web site, is the message nearly every insurance company is trying to convey these days.

Actually, they don't have much choice. Mutual funds companies, banks, brokerages and other competitors have been snatching insurers' customers for the better part of the past decade.

Although insurers have a strong track record of using sophisticated technology to manage people's estates over the long haul, they are only now "beginning to realize

Insurance, page 28

Triple indemnity

Insurers plan to broaden their use of the Web to include:

- Direct sales
- Entertainment features, such as PC games
- Intranet capabilities to serve customers with electronic versions of product literature and account information

Source: Life Office Management Association, Atlanta

Newspaper
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WHAT'S INSIDE

- Sun is rolling out "Joe," a free link between Java and object-oriented middleware. **See story, page 6,** *by Frank Hayes.*
- The price of Microsoft's premier support for enterprise customers just jumped 60%, from $25,000 to $40,000 annually. **See story, page 8,** *by Stuart J. Johnston.*
- Tracking visitors to Web sites is a tough hike. Our Closer Look will clear the path for you. **See story, page 63,** *by Mitch Wagner.*

Closer Look

A PUBLICATION OF IDG

Inside Computerworld

March 4, 1996

News

NEWS

Bay ships LAN modules
Bay Networks is shipping the first of several long-overdue LAN switching modules for its flagship System 5000 switching hub.

HP 3000 catches the Web
Users of Hewlett-Packard's proprietary HP 3000 systems will finally get World Wide Web features.

Microsoft raises prices
Microsoft last week hiked the price of its Premier technical support plan by 60% in a revamp that added services and features for users.

DCE connects to the 'net
Tools to connect the Distributed Computing Environment to the Internet will appear in the next few months.

Windows classic
Hardware vendors will continue to dual-load Windows 3.11 and Windows 95 in their commercial PC lines because of strong user demand.

Backing up client/server
Storage vendor EMC adds two backup products for near-line storage and open systems backup.

'net client/server
Lawson Software leads the charge to integrate client/server applications with the Internet.

Internet devices
Oracle displays a working prototype of its Internet-access device, but users and analysts question its value.

Notebooks get faster
Intel releases the mobile version of its 133-MHz Pentium chip, and several vendors follow up with high-priced notebooks based on the new chip.

OPINION

'net gain
Those who oppose the idea of an Internet terminal miss the point, Paul Gillin says. How many TVs do you have in your home?

Apple's recovery road
It's easy to see that Apple was trapped by its success. But it can recover, argues Rick Frazier.

Network management
Our distributed systems are so badly managed, it's a wonder our businesses function at all, says Patricia B. Seybold.

Choice Cuts

Linda Kilcrease *never thought she'd lose her job to a foreign programmer — until it happened. Overcoming programmer discontent at home is just one hurdle U.S. companies face in outsourcing work to foreign programmers.* **See In Depth, page 79**

David Sykes

California Pizza Kitchen *has improved its profit margins by up to 5%, thanks to a new client/server networking setup.* **See Corporate Strategies, page 69**

Technical Sections

SERVERS & PCS

IBM network servers
IBM fleshes out its PCs and server lines with network-centric systems and features.

Web servers
Web-ready servers become a fact of life as Compaq joins the crowd.

SOFTWARE

E-mail/groupware combo
Despite vendors' best attempts to persuade users to buy combination groupware/E-mail systems, users aren't jumping on the bandwagon just yet.

OpenDoc hits
IBM and Apple's OpenDoc component system is finally beginning to arrive. But it still lacks some crucial elements, users said.

THE ENTERPRISE NETWORK

Route this!
Remote office router users look for new features from vendors.

Outsourcing remote access
Users may soon be able to outsource their remote access operations to telephone companies, thanks to a new WAN switch.

THE INTERNET

Tracking tools
A closer look at how to track visits to your Web site.

Web robots
Beware the evil robot lurking on the Web.

CORPORATE STRATEGIES

ISDN in medicine
Several hospitals and health care consortiums are beginning to use ISDN to conduct telemedicine and link central hospitals with remote locations.

Implementing R/3
The good, the bad and the ugly of a SAP R/3 implementation.

Features

MANAGING

F.Y.I.
Cemex fights chaos with chaos theory.

Surf sites
We rate consultants' Web sites.

IN DEPTH

The ins and outs of outsourcing to foreign programmers

MARKETPLACE

Optical storage
Change has been slow but steady in optical storage.

CAREERS

Double your salary!
That's the potential for IS professionals with the right relational database skills. SQL, Sybase and Oracle top the list.

Etc.

April Conferences ____ 76
Company Index ____ 107
Crossword Puzzle ____ 110
Editorial/Letters ____ 36
Finance & Investing ____ 105
How to contact CW ____ 107
IS Manager's Bookshelf ____ 76
Inside Lines ____ 110
Stock Ticker ____ 106

Your desktops are humming.

They run Windows, OS/2 and DOS.

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But they also need access to your legacy system.

How do they get in?

[Can your software do this?]

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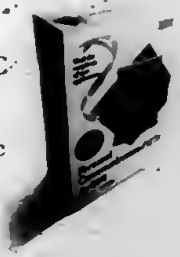

We even have a PC Toolkit for Visual Basic that allows you to customize emulation for your specific business needs.

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altcw

Compiled by Mitch Betts

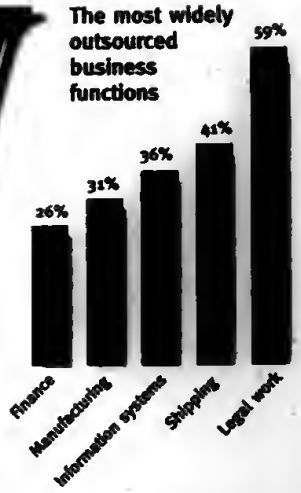
- Find the nine-digit ZIP code for any U.S. address (http://www.cedar.buffalo.edu/adserv.html).
- Get travel information for hundreds of cities (http://www.city.net/).
- Track your Fedex package (http://www.fedex.com/track_it.html).
- Look up telephone area codes (http://www.555-1212.com/acdlookup.html).
- See weather forecasts (http://www.intellicast.com/).
- Search a database of 1,895 Internet service providers (http://www.thelist.com).
- Locate doctors, hospitals and medical news (http://www.medaccess.com).
- File a consumer complaint with the Better Business Bureau (http://www.bbb.org/webindex.html).

Why is this guy smiling? Maybe it's because he's got the high-tech version of a whoopee cushion on the back of his chair. The Interactor Cushion from Aura Systems in El Segundo, Calif., adds the sensation of feeling to multimedia computer programs. The virtual reality cushion costs $139. It uses patented "electromagnetic actuator technology" — technology that initially was developed for the U.S. military — to create pulsating vibrations that are in sync with a soundtrack.

Many companies use desktop mapping systems, which are loaded with demographic data, to find the best locations for retail stores. Now they can also find out if it's a high-crime site by using a database developed by CAP Index in King of Prussia, Pa., and Urban Decision Systems in Fairfax, Va. The demographic database was derived from thousands of police reports and gives each location a crime-risk score relative to local or national averages.

The instruction to "double-click" on an icon may become "double-tap" if the Touche' Touch Pad takes off. The mouse alternative from International Technology Associates in Sausalito, Calif., lets users slide a finger across the sensor membrane to move the cursor and tap the membrane to activate commands. The vendor claims the motion is more fluid and intuitive. The touch pad costs $60.

■ Send contributions of offbeat news, lists and anecdotes to mbetts@cw.com.



Base: 303 companies in North America and Europe (multiple responses allowed)

Source: The Economist Intelligence Unit, New York; Arthur Andersen & Co., Chicago

Digital Frontiers

Researchers at Stanford University in Stanford, Calif., can make and fax three-dimensional computer models of objects. The models are so detailed that they can be used to make an accurate copy of the original object.

The capability has several possible applications, including computer graphics, Hollywood animation and the duplication of engineering prototypes or rare artifacts. On-line shoppers in the future might be able to download 3-D models of products so they can inspect them in greater detail.

In January, the researchers scanned a six-inch plastic sculpture and converted it to a 3-D computer model. The process took about six hours.

The researchers transmitted the model to 3-D Systems, a Valencia, Calif., company that uses a process called stereolithography to create plastic models.

The key step in this "3-D fax" project, according to computer science professor Marc Levoy, is automating the laborious process of creating the 3-D computer model. The researchers use a new "volumetric" algorithm that does a better-than-usual job of showing tiny details, such as sharp corners or points, Levoy says.

The U.S. Postal Service recently unveiled the first postage stamp to honor the computer (at right) during ceremonies in Philadelphia that marked the 50th anniversary of the Electronic Numeric Integrator and Calculator.

News shorts

Compaq cautions investors

PC giant Compaq Computer Corp. warned Wall Street late last week that its PCs sales were slowing in the current quarter, as February sales haven't reached "anticipated growth levels." David Schempf, Compaq's corporate controller, denied a first-quarter loss was likely, but he did say revenue was likely to fall by 15%. Pricing pressures and increased competition in distribution channels were blamed for the slowdown. Compaq promised immediate "selected" price cuts and efforts to cut operating expenses. A source said Compaq will cut prices 30% today on some models. Wall Street in turn predicted a PC price war in the second quarter.

Exchange beta ready to roll

Microsoft Corp. will introduce its Exchange Server at Networld/Interop '96 later this month, after two years of product testing.

Nabisco, Inc. in Parsippany, N.J., Shell Oil Co. in Houston, Federated Department Stores, Inc. in New York and Intergraph Corp. in Huntsville, Ala., are among the beta sites going into full-scale use of the client/server messaging platform, which includes some groupware features.

Microsoft estimated there are 40,000 beta production seats right now, plus another 16,000 at Microsoft itself.

The software will go to manufacturing in the next two weeks, said Greg Lobdell, Exchange product manager at Microsoft. The only major change made to the final release was the ability to add links to World Wide Web pages inside an Exchange message, he said.

Price Waterhouse under fire in royalty case

Did **Price Waterhouse** build its billion-dollar re-engineering practice on the shoulders of a Tampa, Fla., podiatrist?

That's what a three-judge arbitration panel will determine in Los Angeles next month when it hears arguments in a binding arbitration between the Big Six consulting firm and Errico Technologies, Inc.

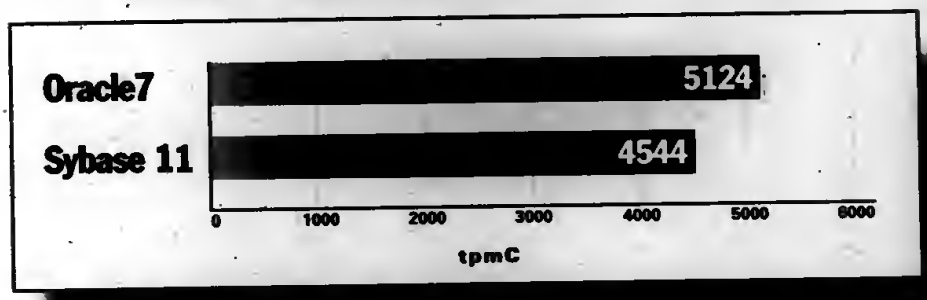
Errico, founded by Dr. Frank Errico and his son, Stephen Errico, licensed its computer systems re-engineering software and methodologies to Price Waterhouse in 1989. Errico claims Price Waterhouse offered to pay it $100,000 in royalties, but Errico thought that was only a fraction of the royalties it should have received for its ARRAE technologies, said Steven Yerrid, an attorney at Yerrid, Knopik, & Valenzuela who is representing the Erricos. Yerrid claimed his client is due "tens of millions of dollars" in back royalties. Price Waterhouse's attorney declined to comment.

For more **News shorts**, *see page 8*

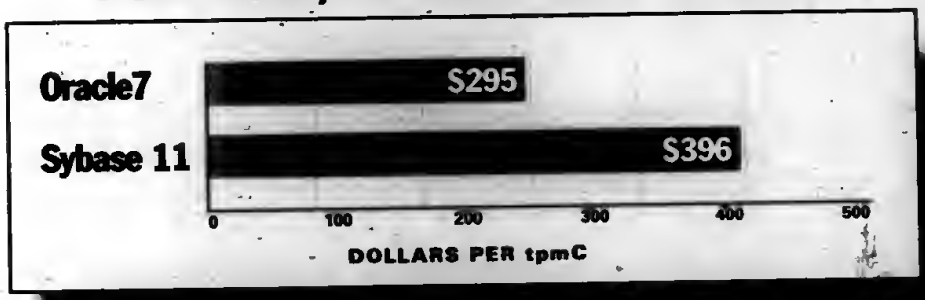
Oracle7 Outshines Sybase on Sun

The TPC-C benchmark is the industry standard test for measuring database On-Line Transaction Processing (OLTP) performance.

Fastest Transaction Rate on Sun



Best Price/Performance on Sun



When Oracle and Sybase were tested on a 16-cpu Sun Solaris system, Oracle clearly out-performed Sybase System 11 on price and performance. (It's almost not worth mentioning, but we also creamed Informix.) Just one more proof point that Oracle7 is faster, cheaper and better. Think about it. Then call Oracle, 1-800-633-1071, ext 8118.

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At last, Bay switch is on

Ships System 5000 switching modules

By Bob Wallace

Better late than never.

Bay Networks, Inc. last week began shipping the first in a series of long-overdue and sorely needed LAN switching modules to its flagship System 5000 high-end switching hub.

The Billerica, Mass., vendor will formally announce the long-promised wares at the Networld/Interop '96 show later this month.

The products, including some key enhancements not previously discussed publicly, will help Bay enter the high-end switching race with 3Com Corp., Cabletron Systems, Inc. and Cisco Systems, Inc.

"We've been pressing them for the Ethernet switching module because we're looking to switching to upgrade our network infrastructure," said Chuck Rush, global network architect at McDonald's Corp. in Oakbrook Terrace, Ill. "Would we have liked to see [the modules] earlier? Definitely." He said no single application is driving the need for switching.

Sources briefed by Bay said the products will include an Ethernet switching module, which Bay confirmed it began shipping in volume last week, and an Asynchronous Transfer Mode (ATM) backplane for the System 5000. Bay already offers Ethernet switching on its 28000 hub line, but the System 5000 was designed to anchor backbone networks.

"Hallelujah!" said Eric Hindin, a senior networking analyst at The Yankee Group, a Boston consultancy. "This will finally get them into the high-end switching ball game."

Switching lets information systems managers deliver dedicated bandwidth pipes to growing pools of users who contend for today's shared-capacity LANs. High-end switching is well-suited for breaking up bandwidth bottlenecks in backbone networks.

Bay is the result of a 1994 merger between switch vendor SynOptics Communications, Inc. and router titan Wellfleet Communications, Inc. SynOptics had promised LAN switching modules for the System 5000 as early as 1993, but until last week, Bay hadn't shipped any and declined to say why.

Last week, a Bay spokeswoman confirmed plans to announce LAN switching modules and other System 5000 enhancements at the show but wouldn't provide product details.

Technology transfer

However, sources who were briefed said several of the modules for the System 5000s will be based on technology gained via Bay's acquisition of LAN switching start-up Centillion Networks, Inc. last May for $140 million.

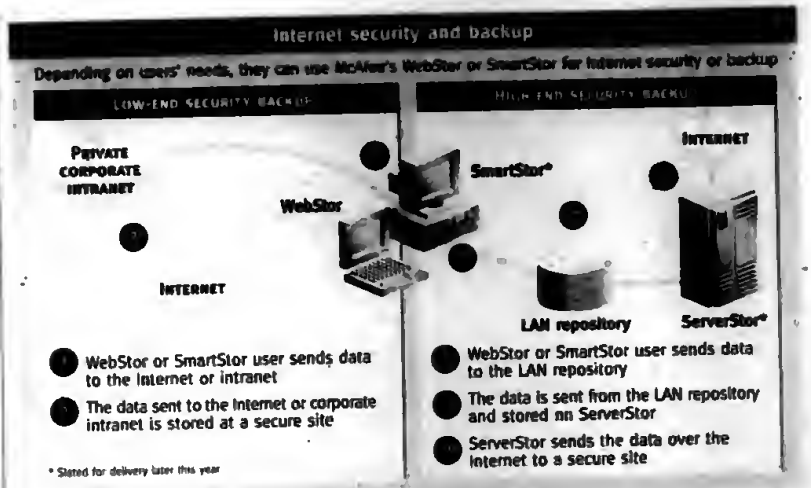
Source: Dataquest, Inc., San Jose, Calif.

Paul Weinstein, an analyst at PaineWebber, Inc. in New York, said the LAN switching module line — which will include Ethernet and Fast Ethernet switching modules — will be called the 58000. The Ethernet switching modules will be based on a unit that Bay already uses in its lower-end 28000 switching hub. A Fiber Distributed Data Interface (FDDI) switching module is also in the works.

But Bay still is climbing uphill, as 3Com already offers Ethernet, Token Ring, Fast Ethernet and FDDI LAN switching modules for its LANplex 6000. Cabletron offers Ethernet and FDDI switching on the MMAC-Plus, and Cisco offers Ethernet switching, FDDI and Fast Ethernet switching.

Weinstein said Bay also is prepping an ATM backplane called the 5000BH from Centillion for the System 5000. This product could ship as early as late summer. Bay is also working on a product called the BH-MSX, which would enable the System 5000 to support next-generation switching technology, Weinstein said. It could ship by early next year.

Remote office routers have a long way to go. See page 55.



'net becomes backup medium

By Bob Francis

Forget those piles of diskettes and time-consuming tapes for data backup. The latest medium for backup is the Internet.

Last week, LAN vendor McAfee Associates, Inc. in Santa Clara, Calif., announced WebStor, a backup tool that uses the Internet as the backup medium.

The current version was designed primarily for individual users, but future versions will be geared for backing up LAN servers via the Internet.

Using WebStor, a user can back up data to either a corporate intranet or an Internet site with a shell user account. If the user needs to restore the data, a connection to the Internet site will return it. WebStor will be available in April and will cost $65.

Other storage vendors also have designs on the Internet:

- Andataco in San Diego offers an Internet Storage Management application that allows managers to control and monitor RAID systems from the Internet.
- D. S. Data Storage, Inc. in North York, Ont., offers a system that lets portable PC users store data off-site over the Internet.

Users said the idea of using the Internet for data backup is worth exploring. "The idea has merit," said Bert Loveland, a storage consultant at Northern States Power in Minneapolis. "I can see where the fact that it's user-controlled might be an asset."

And analysts expect to see more storage taking place over the Internet soon. "We knew it was going to happen soon; we just didn't know when we'd see it," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

Mason said the Internet offers a lot of promise as a backup tool. "There's not a lot of disks or tapes to work with locally, just an icon basically to get your data back," he said.

Like Java? Have a cup of Joe

By Frank Hayes

Racing to make Java *the* way to build enterprise applications on the Internet and corporate networks, Sun Microsystems, Inc. on March 26 will unveil Joe, a link between Java and Sun's object middleware, Network Enterprise Objects.

And to make sure corporate developers like the taste of Joe, Sun plans to give it away free.

Java applications can be downloaded across the Internet and run unchanged on Windows, Unix and other platforms. Joe will let Java applications easily link with enterprise networks based on the Common Object Request Broker Architecture (CORBA) middleware standard.

"CORBA is starting to take off, and we're seeing an explosion of World Wide Web-based front-end applications," said Jack Needham, leader of the object-oriented action team at the information systems division of Harris Corp. in Melbourne, Fla. Harris builds CORBA-based systems.

Object request brokers are the backbone of a CORBA-based system. They transparently handle communication between objects on a network.

"Java lets you put a lot more intelligence in the downloaded code, and CORBA takes less of a toll on your server" than the Common Gateway Interface used for standard Web pages, said Mark Harrison, a systems architect at a telecommunications company that uses Java and CORBA.

Most major operating system vendors offer CORBA middleware systems. One exception is Microsoft Corp., which plans to roll out its object middleware, Network OLE, later this year.

Joe was designed to work with Sun's Network Enterprise Objects, the vendor's version of CORBA. Later this year, Joe will be upgraded to communicate with applications built with CORBA systems from other vendors, including IBM, Digital Equipment Corp. and Hewlett-Packard Co.

Joe, which is written in Java, will compete with similar products announced recently by Iona Technologies Ltd. in Marlboro, Mass., and PostModern Computing Technologies, Inc. in Mountain View, Calif.

But because Joe is free, it may appeal more to large customers than other Java-to-CORBA approaches, which require runtime fees of $100 or more.

"Price is an issue for large installations. If a thousand sites will cost an extra hundred bucks per site, users may not be happy," Needham said. "But if it's free, it's not an issue."

HP 3000 users arrive on Web

WebServer software available in April for MPE/IX

By Michael Goldberg

They have played second fiddle to users of Unix-based systems when it comes to World Wide Web features. But users of Hewlett-Packard Co.'s proprietary HP 3000 systems will get front-and-center treatment starting next month, company officials said.

HP today will announce a version of Open Market, Inc.'s WebServer software for the HP 3000 MPE/IX operating system. The software will be available in April and will cost $1,650.

June vow

Digital Equipment Corp. has promised users of its proprietary OpenVMS systems that they can buy Netscape Commerce Server software sometime in June to make their Alpha systems into Web servers.

An HP 3000 version of Open Market's Secure WebServer software for secure Internet transactions is due by the summer. HP will provide user support for the products, said Andy Jolls, mid-range product manager for the HP 3000.

HP 3000 users have relied on unsupported freeware to run their systems as Web servers, so getting HP-supported WebServer software was good news.

"That would be something we'd want to look at," said David Myers, a systems analyst at Time Customer Service, Inc. in Tampa, Fla. Myers said he has considered making his HP 3000 a Web server by using freeware. In that configuration, he would still need a Unix system to transmit information between the Web and the HP 3000.

Unix dominates Web servers, but analysts said a long-standing and loyal HP 3000 user base made it important that HP offer a Web software package.

Rick Whiting, an analyst at Summit Strategies, Inc. in Boston, said HP gives "basic Web functionality" to HP 3000 users. But companies that want to set up commercial-based Web sites probably would need a Unix-based system. The HP 3000 "isn't for someone who is going to [transact] online business. If they were going to set up a Web storefront, and not just use the Web for communications, Unix is the de facto standard," Whiting said.

For some users, HP's WebServer software plans have come too late.

Students and professors at John Abbott College in Ste. Anne de Bellevue, Quebec, access the Web via Sun Microsystems, Inc.'s Unix server. Eric Bender, coordinator of computer services at the college, said he investigated setting up his HP 3000 as a Web server last year but nixed the idea.

"We were led to believe if we used the HP 3000 as the [Web] server, we weren't going to be able to use the graphics capabilities of the 'net," Bender said. He said the college also had security questions.

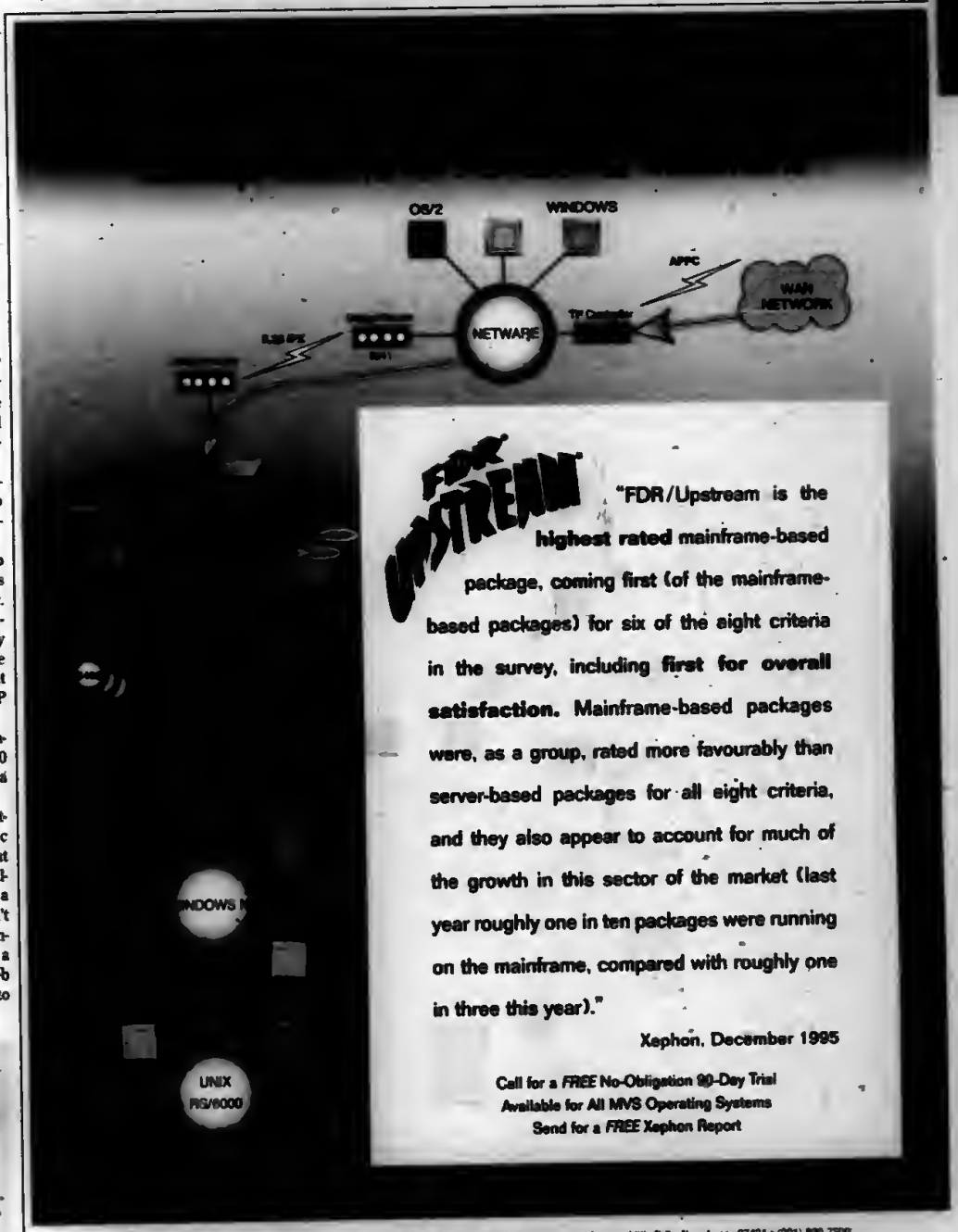
Separately, HP will boost its HP 3000 Model KS by giving it a 120-MHz PA-RISC 7200 and increasing the cache from 256K bytes to 1M byte. HP will give discounts to customers who trade in their older processor boards.

More and more servers ship Web-ready. See page 43.

World Wide Web software for HP 3000 users

	Price	Availability
Open Market WebServer software*	$1,650	April
Open Market Secure WebServer	Not available**	Midyear

*Compatible with MPE/IX 5.0 or higher
**Secure WebServer for Unix costs $4,995



FDR UPSTREAM

"FDR/Upstream is the highest rated mainframe-based package, coming first (of the mainframe-based packages) for six of the eight criteria in the survey, including first for overall satisfaction. Mainframe-based packages were, as a group, rated more favourably than server-based packages for all eight criteria, and they also appear to account for much of the growth in this sector of the market (last year roughly one in ten packages were running on the mainframe, compared with roughly one in three this year)."

Xephon, December 1995

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Microsoft hikes premium support

By Stuart J. Johnston

Microsoft Corp. last week increased the price of its Premier technical support plan by 60% in a revamp that added new services and features for enterprise customers.

Premier plan customers will pay $40,000 per year for unlimited support rather than the $25,000 they paid previously.

Some larger information systems operations took the substantial price hike in stride, but others said they will feel the squeeze.

"They're running the price out of sight," said Briscoe Stephens, coordinator for space sciences in the Advanced Scientific Information Systems group at NASA in Huntsville, Ala. "We [might have to] just throw our hands up and quit."

Stephens, who complained that as a government agency NASA is highly constrained in its budget, was the most outspoken among seven Premier customers interviewed by *Computerworld* last week.

Others don't mind

The price increase wasn't such a letdown for Federated Systems Group in Atlanta, however.

"With our budget, certainly it's still worth it [because] we've found Microsoft support to be very helpful," said Deborah Phillipeck, vice president of networks and technology at the division of Federated Department Stores, Inc.

She said the Microsoft program was a good deal even at $40,000 when compared with Oracle Corp.'s $75,000 corporate support plan, Oracle Gold.

Newcomer to program

One of the new features is an extra-cost option to have Microsoft remotely monitor and troubleshoot its Windows NT servers at customer sites. This Premier Watch option costs $6,000 per server per year and a one-time $5,000 site setup fee.

"In many cases, [Microsoft's support personnel] will be able to spot a problem, fix it and then send you a [message] saying, 'There was going to be a problem so we fixed it'," said Britt Mayo, director of information technology at Pennzoil Co. in Houston.

"[Monitoring] things like servers having problems or running out of disk space, we don't want to do that," Mayo said. He said a support service from Microsoft will leave his staff free for tasks that "provide value to Pennzoil."

Microsoft's Premier plan was established two years ago to support its business products, including NT and the BackOffice server suite. It gives customers of all released products dedicated technical support 24 hours a day, seven days a week. There is no limit on the number of incidents covered.

Microsoft ordinarily provides on-line support only for beta products, which can leave users waiting for hours or days for fixes to important problems.

For customers who can't afford the $40,000 plan, Microsoft offers packages that range from $1,495 for up to 10 incidents per year to $10,000 for up to 75 incidents per year. The vendor also offers a plan in which users are billed $195 per incident. Because a problem may take more than one telephone call to resolve, Microsoft charges "per incident" rather than per call.

Premier customers squeezed out of the plan by the price increase will likely fall back to one of the per-incident plans, said Ladd Bodem, vice president of research at Dataquest, Inc. in Westboro, Mass.

But Stephens said the per-incident plans aren't economical, particularly because his group beta-tests so many Microsoft products.

Support breakdown

Microsoft's basic enterprise support program, Premier, gives large customers 7-day-a-week/24-hour-a-day support for commercial products. Users also get dedicated support and unlimited incidents.

Early Assist – Phone support for beta products 7 days a week/24 hours a day

Multivendor Coordination – Microsoft will take the lead in working with other vendors in multivendor situations

Premier Service Desk – Lets customers submit service requests over the Internet

Price – Increases from $25,000 to $40,000

Premier watch – $5,000 setup fee plus $6,000 per server per year. Microsoft will remotely monitor customers' Windows NT servers for potential problems.

Premier Development Lab – Lets customers work on their custom code with developers at Microsoft.

AT&T to offer cheap 'net access

By Mitch Wagner

AT&T Corp. has jumped into the pricing wars for dial-up Internet connectivity. Beginning the week of March 11, the company plans to offer existing telephone service customers unlimited Internet access for $19.95 per month.

For other customers, it will cost $24.95 per month for unlimited Internet usage or $4.95 for first three hours plus $2.50 per hour for each additional hour.

Last month, CompuServe, Inc. announced plans for $19.95 per month, all-you-can-eat Internet access. Prodigy, Inc. said it plans to offer a trial Internet service in the New York metropolitan area that features dial-up Internet access for $1 per month with no minimum.

The services were primarily designed for consumers and will most likely bring a bigger audience to companies looking to use the Internet for consumer business, such as sales, advertising and customer support.

The plans may interest information systems managers who want to give users dial-up access to the Internet.

News Shorts

Sun realigns Solstice

SunSoft, Inc. last week expanded the capabilities of its Solstice network management line, adding tools to help distribute and manage software throughout client/server networks. The company's PC Software Director fills a gap in SunSoft's line because it helps central administrators push commercial or custom applications to the appropriate desktops.

Intel 'fesses up

Intel Corp. has acknowledged a chip flaw that could slow down about 2% of the 100,000 Pentium Pro models sold since Intel introduced the chip in November. The company last week said it will help consumers work with PC makers to repair or replace the faulty circuitry.

IBM drops X terminal line

IBM will announce this week that it will drop out of the X Window System terminal business and resell products by market leader **Network Computing Devices, Inc.** (NCD) in Mountain View, Calif. NCD will support IBM's installed X terminals. Meanwhile, NCD's software unit introduced a cut-rate version of its PC-Xware Unix emulation package for PCs. PC-Xware Classic drops the TCP/IP stack, network file system and terminal emulation included in the full product in exchange for a price cut from $545 to $395.

Novell feathers NEST

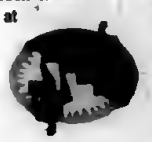
Novell, Inc. has released an enhanced version of the NEST software developer's kit, which includes native TCP/IP support. This will let NetWare users connect to the Internet by using this protocol instead of Novell's proprietary IPX/SPX protocol.

Fix the network first

Even the best client/server applications will choke if the underlying network is inadequate. **Software 2000, Inc.** in Hyannis, Mass., this week will team up with a network services provider to assist users of its financial management and human resources software. The technology group at **Stream International, Inc.** in Westwood, Mass., can help Software 2000 users with LAN design, migration, installation, audits and support.

Thank you, PaineWebber

Scott G. Abbey has been named chief information officer at **PaineWebber, Inc.** Abbey formerly was technology managing director at **Bankers Trust New York Corp.** He replaces Robert McKinney, who left PaineWebber in November.



Bay acquires Rmon vendor

With its $33 million bid for **Armon Networking Ltd.** in Tel Aviv, **Bay Networks, Inc.** is betting on users' continued demand for Remote Monitoring (Rmon) tools to help maintain distributed client/server networks. Bay already offers Rmon agents in its internetworking gear and has acquired one of the few vendors of external Rmon probes and analysis software.

Paying bills via PDAs

General Magic, Inc. last week announced software that reportedly will let customers pay bills and transfer bank funds via handheld personal digital assistants that run Magic CAP, the company's operating system.

DEC powers up fastest Alpha

Digital Equipment Corp. today will unveil its latest Alpha microprocessors, which reach clock speeds of 366 MHz and 400 MHz while wasting less power than previous models. The chips were made with the company's 0.35-micron CMOS manufacturing process at its Hudson, Mass., plant.

Apple plucks new exec

Gilbert Amelio, CEO at **Apple Computer, Inc.**, last week named a former **National Semiconductor Corp.** colleague to the newly created position of chief administrative officer at Apple. George Scalise, former executive vice president at National Semiconductor, will be Apple's No. 2 man.

IBM to ship CICS for clients

IBM in April plans to ship object-oriented client versions of its CICS transaction manager for OS/2 and Windows desktops. AIX support will follow in June or July. IBM officials said at Decorum '96 held last week in Florida. An early release of a set of object foundation classes for CICS servers is also due in April. A more finished product should be ready late this year or early next year, IBM officials said.

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TBLA

DCE vendors eye Internet connections

By Craig Stedman
PALM HARBOR, FLA.

DCE is turning its lonely eyes to the Internet.

Hoping to enliven the image of the Distributed Computing Environment (DCE), vendors in the next few months will release tools for connecting the complex middleware to the on-line world.

DCE is a pioneering technology developed by the Open Software Foundation that has been slow to catch on. It provides Kerberos security, user authentication and access control services that would make it hard for undesirables to infiltrate applications on the Internet or corporate intranets.

Some users at Decorum '96, a DCE-oriented conference held here last week, said DCE's security and scaling features could help them do business safely over the Internet. But DCE's cost could be a hindrance, several said.

"We need to have something that's robust and can scale really big," and DCE is one of the options, said Giora Panigel, a systems designer at American President Lines Ltd. in Oakland, Calif.

The container transport company may use DCE to secure World Wide Web-based shipment-tracking and order-entry applications it is developing, Panigel said. But other security technologies are also being considered, he added.

On tap

Products that link Web browsers to DCE networks will soon be available from Gradient Technologies, Inc. in Marlboro, Mass.; Open Horizon, Inc. in Belmont, Calif.; and IBM's Transarc unit in Pittsburgh.

Fidelity Investments, Inc., the Boston-based mutual funds giant, said it is working on Internet applications that will link its customers to DCE services. Attendees from other financial services firms said they are also interested in linking DCE to the Web.

Scaling features

There are security alternatives such as firewalls, "but there aren't other security mechanisms that are integrated with a scalable transaction processing system," said one such user. "For a large firm with millions of customers, you need something that scales to infrastructure levels if you're going to put it on the Web," added the user, who requested anonymity.

Several vendors are prepping products that link Web browsers to DCE networks. But the need to equip every PC with DCE client software that can cost $100 or more is a potential drawback.

IBM's Transarc Corp. subsidiary will avoid that obstacle with its DE-Light software, which is based on Sun Microsystems, Inc.'s Java language. But the software replaces DCE security with password scrambling technology that Transarc officials acknowledged is less than bulletproof.

"It's going to be a while before we put DCE clients in our dorms," said Thomas Sanfilippo, technical manager for administrative systems at Ohio State University in Columbus.

The school, which developed its own Web-to-DCE links for use by 60,000 students, faculty and staff members, instead relies on Netscape Communications Corp.'s encryption technology to keep intruders out. But that approach is a compromise, Sanfilippo said.

DCE should find Web uses at shops that need "a fairly big gun," said Jim Johnson, an analyst at The Standish Group International, Inc. in Dennis, Mass. "But there's nothing that unique about DCE on the Web. There are many ways to skin this cat."

Supposedly benign Web robots can bite. See page 65.

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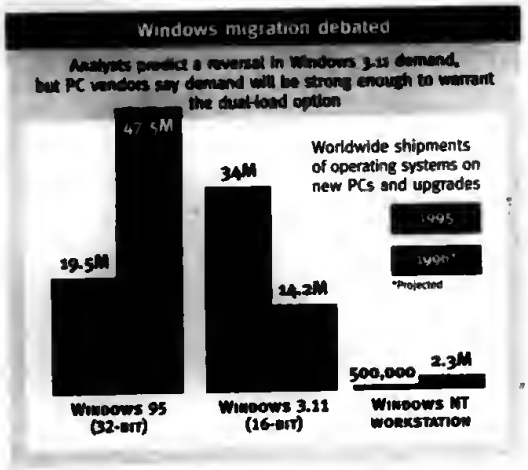
Which Windows? Take your pick

By Jaikumar Vijayan

Responding to user demand, PC hardware vendors will continue to load Windows 3.11 and Windows 95 on their commercial PC lines until at least early next year.

That decision is directly related to slow corporate adoption of Windows 95 and a sufficiently strong demand for the Windows 3.11 operating system, several vendors said last week.

"Vendors are stuck between Microsoft trying to ram Windows 95 down their throats and their customers telling them they want Windows 3.11," said Joseph Ferlazzo, an analyst at Technologies Business Research, Inc. in Hampton, N.H.



Source: International Data Corp., Framingham, Mass.

Free to choose

"I think it continues to give users choice. This way, we are not being forced to choose Windows 95, whether we want it or not," said Leslie Peckham, a technology development analyst at Principal Financial Group in Des Moines, Iowa. At the end of last year, about 19.5 million copies of Windows 95 had shipped worldwide — about 8.5 million of them to corporations. This compared with the shipment of 34 million copies of 16-bit Windows, according to International Data Corp. (IDC), a market research firm in Framingham, Mass.

IDC projects that about 47.5 million copies of Windows 95 will ship this year — more than 60% to corporations — compared with about 14.2 million copies of Windows 3.11.

Several major hardware vendors launched the dual-load option as a transitional measure.

Compaq Computer Corp., Hewlett-Packard Co. and NEC Technologies, Inc. offered the option when Microsoft Corp. announced its much-hyped Windows 95 operating system last August. Under the option, vendors bundle Windows 3.11 and Windows 95 in their commercial lines. Users choose either one and pay only for that operating system.

Operating systems

The dual-load option is a good one for users such as Roger Thibodeaux, assistant vice president of MIS at Connecticut Mutual Life Insurance Co. He said the company isn't quite ready to migrate to Windows 95. "Some of our agencies are buying Pentium machines with Windows 95, and we are telling them to take it out and load Windows 3.11 instead," he said. Some of the firm's legacy applications haven't ported easily to Windows 95, Thibodeaux said.

This kind of corporate reaction is prompting vendors to extend their dual-load options, said Greg Young, a product manager at Compaq in Houston.

"Certainly we are seeing a [migration] trend toward Windows 95 and Windows NT, but at this point, commercial demand for Windows 3.11 is greater than either of the others," Young said.

Compaq will continue to offer the dual-load option at least through the rest of the year, he said. And with less than 20% of their commercial systems shipping with Windows 95, companies such as NEC in Mountain View, Calif., will follow suit, said Mary Chin, vice president of commercial systems at NEC.

IBM has a slightly different idea about how to handle operating system needs. The company last week said it will offer a commercial PC without an operating system; users can load the operating system of their choice.

Compaq leads PC pack in spicing up desktop

By Jaikumar Vijayan
and Bob Francis

Compaq Computer Corp. has refreshed its commercial PC line with new processors and a slew of personal storage management options.

The highlight of the announcement was the Houston-based company's introduction of two new storage options. One is the LS-120, a 120M-byte disk that is backward-compatible with 1.44M-byte floppy disks. The other is the PD-CD, a rewritable CD-ROM drive designed for backup.

The LS-120 will compete with Iomega Corp.'s 100M-byte Zip drives, which are offered on some Hewlett-Packard Co. PCs, said James Porter, president of Disk/Trend, Inc., a research firm in Cupertino, Calif.

Compaq also introduced 150- and 166-MHz Pentium models in its ProLinea and DeskPro families and a 200-MHz Pentium Pro model in its high-end DeskPro XL line.

Announcements from other vendors include the following:

- **HP** announced the HP Vectra XM Series 4 PC. It incorporates a LAN Remote Power feature, which allows LAN-connected PCs to be turned on remotely from anywhere on the network.
- **NEC Electronics, Inc.** unveiled 75-, 100- and 133-MHz Pentium additions to its PowerMate V series of entry-level commercial PCs. The firm also announced a PowerMate VE family of PCs, priced at just over $1,000, that it is positioning as an Internet device.
- **IBM** introduced the 133-MHz Pentium processor across its PC Server 310, 320 and 520 families. IBM also introduced 133- and 166-MHz Pentium-based upgrade cards for its highest-end multiprocessor 720 server.

LS-120: A 120M-byte removable diskette for file transfer, backup and on-line storage

PD-CD Drive: A 650M-byte rewritable optical drive and 4-speed CD-ROM drive for archiving, backup and on-line storage

Scanner keyboard: Allows users to scan documents into PCs via the keyboard

HP unloads Smalltalk system

Users happy to see ParcPlace take over

By Frank Hayes

Corporate Smalltalk developers face a simpler — but narrower — set of choices now that Hewlett-Packard Co. has dropped out of the Smalltalk business. But that market consolidation is for the best, users said.

HP last week said it will sell its Distributed Smalltalk development system to ParcPlace-Digitalk, Inc. in Sunnyvale, Calif. HP's Smalltalk was an enhanced version of ParcPlace-Digitalk's VisualWorks Smalltalk development system.

ParcPlace-Digitalk will take over all development work on the product and, over time, will take over support for former HP Distributed Smalltalk customers, officials from the companies said.

That will make life simpler for users, said Robert Hoffmeister, senior information systems manager at Northern Telecom, Inc. in Research Triangle Park, N.C.

"ParcPlace will be able to deliver new releases of Distributed Smalltalk faster, and I would expect cleaner product integration, too," he said.

Easy to talk to

HP's Distributed Smalltalk is a version of VisualWorks that adds support for distributed applications by using object middleware that conforms to the Common Object Request Broker Architecture (CORBA) standard from the Object Management Group, a vendor and user consortium in Framingham, Mass. Distributed Smalltalk applications can communicate easily with other CORBA-based applications on a network.

The HP/ParcPlace deal comes on the heels of IBM's announcement that it will buy Object Technology International, Inc., which gives IBM Smalltalk technology for its VisualAge Smalltalk development system.

IBM has its own CORBA-based system for distributing Smalltalk and other applications.

ParcPlace-Digitalk was formed last year by the merger of two major Smalltalk players — ParcPlace Systems, Inc. and Digitalk, Inc.

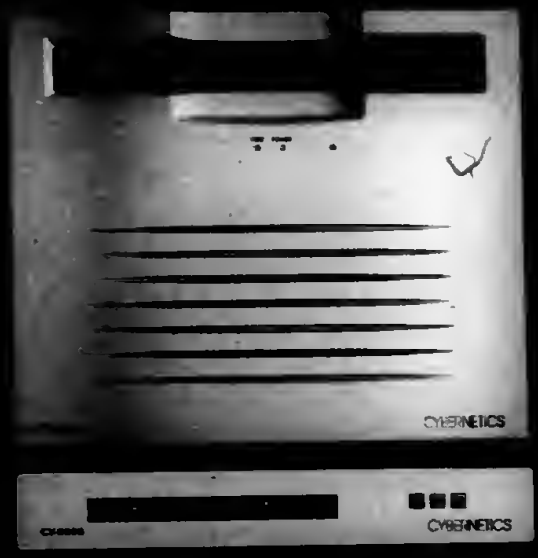
Users say they are encouraged, not concerned, by the consolidation among Smalltalk vendors.

"There are pros and cons, but these companies were already partners. It's nicer to have a single point of contact for these products instead of [dealing] with two companies," Hoffmeister said.

The art of Smalltalk

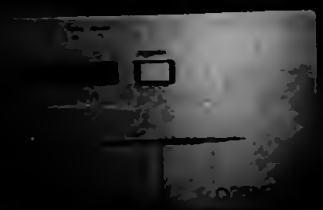
Vendor/Product	Platforms supported	Price
ParcPlace-Digitalk VisualWorks/Distributed Smalltalk	Windows, Windows NT, Unix, SunOS, Solaris, HP-UX, AIX, Siemens Symmetry	[illegible] (PC standard, $[illegible])
IBM VisualAge Smalltalk	Windows 3.1, OS/2, AIX, MVS (beta), 32-bit Windows (beta), non-IBM Unix (beta)	$1,499 (standard/upgrade) $3,799 (team developer version)

210 GB Per Tape At 20 MBS.



The fastest half-inch tape drive on the market

Data compression option utilizes 100% lossless algorithm



Rack mount and library configurations available

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No other tape drive can match it.

1/2" Technology	Transfer Rate (Native)**	Tape Capacity (Native)**
CY-9000 DTF	12 MB/S	42 GB
3590	9 MB/S	10 GB
VHS	8 MB/S	20.5 GB
3490	3 MB/S	800 MB
DLT 4000	1.5 MB/S	20 GB

* *Sentry Market Research*

** *All drives, except VHS, are available with data compression*

The cost of system time varies from site to site, but a recent study has put the cost of a medium sized PC LAN at ***$18,000 per hour*** — and the cost of a UNIX network at ***$30,000 per hour***.* Numbers like that make it easy to understand how a backup/restore solution that can do its job faster can save you serious money.

For example, for a single 40 GB restore, the CY-9000 will save you...

$9,000 over 3590,
$13,500 over VHS,
$83,100 over 3490, and
$194,100 over DLT.

And you won't need to change tapes...

4 times with 3590,
2 times with DLT, and
50 times with 3490.

The CY-9000 can store 42 GB uncompressed on a single tape; at 12 MB per second. Optional data compression can boost tape capacity to up to 210 GB per tape and speed to 20 MB per second — for the fastest backup in its price range.

Based on field-proven helical scan recording technology, the drive is available with Fast/Wide SCSI, ESCON, IBM Channel, and Parallel Data Channel interfaces for plug compatibility with the widest range of computer systems. A 32 MB data buffer speeds throughput, and you can add up to an additional 128 MB of *variable rate buffer* to handle the most demanding data collection applications.

The Advanced SCSI Processor lets two or more 8mm tape drives work together in striping, mirroring, cascade, independent, and offline copy modes

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Client/server vendors join Web browser race

Lawson apps first with 'net access

By Julia King

Dark horse Lawson Software last week became the first client/server vendor to extend access to its applications to standard World Wide Web browsers.

But it certainly won't be the last. Virtually every other vendor is charging ahead to integrate its software packages with the Web, analysts said.

"This is a building year for applications vendors, all of which are adding Web interfaces," said Greg Cline, an analyst at Business Research Group in Newton, Mass. "Lawson may be out there first, but the whole world is behind them."

Close heat

Hot on the heels of Minneapolis-based Lawson are SAP AG and Baan Co. Both have teamed up with Business@Web in Cambridge, Mass. The Internet applications development company is headed by former SAP America, Inc. President Klaus Besier.

Next month, Business@Web will offer Internet access to SAP applications via its OpenExtension for SAP product.

Web interfaces can access applications via the Internet and private intranets. They offer lower costs and the promise of ubiquitous access to corporate data. At $30 per desktop, browser software is downright cheap.

But prior to Lawson's announcement, no enterprise business applications vendor furnished a ready-made interface for browsers. Instead, users were forced to develop their own interfaces and Web applications.

Now, Ingenius Corp., a publisher of multimedia news programs for the education market, uses Lawson's Webpage Generator software to implement an order-fulfillment process.

Internet-enabled applications promise the following benefits:

- **Lower costs:** Browser software is cheaper than PC-based client applications software. Internet usage fees are cheaper than building and maintaining wide-area networks.
- **Ubiquitous access to data:** Browsers work with any client PC, Macintosh or Unix workstation.
- **Fewer version control headaches:** The Web browser is the only piece of distributed software to maintain.

By this summer, the company plans to receive program orders through an Internet Web, which will trigger a series of transactions within its other billing, inventory and fixed-asset applications, all of which are also from Lawson.

"What we're doing is putting order entry out to (Internet) users and also putting the business processes out there. That's what no one else is doing," said Jeff Calkins, Ingenius' information systems director.

Meanwhile, Independence Blue Cross, a Philadelphia-based insurer and user of PeopleSoft, Inc. software, is building its own browser-based application that will give managers access to the time and attendance records of the company's more than 3,000 employees.

"The biggest advantage is we don't have to install PeopleSoft on every desktop. Anybody with a browser can run the application," said John Martines, manager of human resources information services at Independence.

At their fingertips

Employees at $230 million Richardson Electronics Ltd. in LaFox, Ill., have used desktop Web browsers to pull down travel and expense forms from the company's internal Web server for the past two years.

Richardson wants to bring up another server on the Internet. Outside customers could electronically initiate an order within the company's internal system.

The idea is that a completed order sent over the Internet would trigger a series of credit, inventory and shipping transactions "just as if one of our order-entry clerks had typed it directly into the system," said Kevin Reilly, vice president of IS.

"So far, we've looked at PeopleSoft, Computer Associates International, Inc. and SAP, but none have talked about delivering an Internet interface, although I would certainly be interested," Reilly added.

Client/server

EMC expands into new storage markets

Media	Disk	Optical or tape	Tape
Active life	3 to 6 months	3 months to 2 years	2 to 7 years
Response time	Millisecond	Seconds	Seconds to minutes

Storage devices gain new ground for EMC

By Bob Francis

Mainframe storage vendor EMC Corp. will edge farther into the client/server realm this week with two products.

The Hopkinton, Mass., company will roll out the following products:

- Extended-Online Storage (EOS) was designed for the near-line storage market. Companies use near-line storage for data that must be accessed quickly but not frequently.
- EMC Data Manager is used for open systems backup.

EOS is for companies that want faster access to customer billing records stored on tape or optical drives. Because the price of disk storage is dropping, EMC says it can compete with large tape or optical storage systems. The Data Manager targets the Unix multiuser database market for databases that contain terabytes of data.

Both products push the mainframe-oriented storage vendor into new areas, said John McArthur, an analyst at International Data Corp. in Framingham, Mass.

The EOS system is EMC's attempt to migrate near-line data, which usually is stored on tape or optical disc, to disk drives, a faster but more expensive media. McArthur said disk storage costs about $1 per megabyte, and tape costs just a few pennies per megabyte. Optical technologies cost 50 cents to $1 per megabyte.

For users, that cost may prove too high for a faster system.

"I couldn't see us justifying it, even if we did see an increase in speed," said Jeff Griffith, manager of information systems at J. A. Riggs Tractor Co., a dealership in Little Rock, Ark. Riggs uses optical technology from Optical Technology Group, Inc.

Analysts greeted EMC's push into the open systems backup market more positively.

"The Data Manager really solves a problem in the open systems market, which is the difficulty in backing up these large databases," McArthur said.

The Data Manager isn't cheap — prices start at about $115,000 for a system that can back up at speeds of 20G byte per hour. It offers support for Oracle Corp. databases; support is promised for Sybase, Inc. and Informix Systems, Inc. products by year's end.

The Data Manager uses a RAID 5 disk subsystem and backs up the files to digital linear tape or 8mm tape formats. It can store up to 1.5T bytes of information.

Poor support, 'net delays frustrate Quicken users

Intuit's snafus may be harbinger of firm's troubles integrating PC software with Web

By Kim S. Nash

Network connection snafus that left users in cyberlimbo have thrown cold water on Intuit, Inc.'s much-lauded effort to give Quicken users sophisticated on-line banking.

Intuit's problems may be the ghost of PC future as more desktop software firms integrate on-line, Internet and World Wide Web capabilities with their products, observers said.

Such vendors are stepping into new territory when they put spreadsheets, word processors and the like on the Web. "These companies don't know the Internet from Adam," said an analyst who requested anonymity.

For Menlo Park, Calif.-based Intuit, hardware and software incompatibilities between its private wide-area network and that of partner First Data Corp. left users unable to access their accounts or perform transactions. First Data handles user authentication for Intuit.

The problem affected an undetermined but "large" number of users who dialed Intuit's network, which is run out of a data center in Downers Grove, Ill., an Intuit spokesman acknowledged last week.

To compound frustration, customer pleas for technical support from Intuit have gone unanswered.

"They are clearly understaffed and underequipped to handle the load," said a customer who asked to remain anonymous.

Intuit has acknowledged these glitches and has started to fix them.

On-line banking

Users can buy Intuit's tax packages, TurboTax and MacinTax, on-line via the Internet Shopping Network (http://www.internet.net).

The vendor has nearly tripled, to 25, the number of customer support people working in customer forums in CompuServe and other on-line services. A support group in Tucson was added to handle the flood of calls to Intuit's primary center in Downers Grove. An 800-number was also added, the spokesman said.

Intuit seems to be stretching itself thin, said Mark Hardie, an analyst at The Tower Group, a Wellesley, Mass.-based financial services and technology consultancy.

"If Intuit keeps trying to provide all these things like consumer interfaces, financial services and Web browsers," Hardie said, "then they're going to run into some formidable challenges."

Senior editor Thomas Hoffman contributed to this report.

Oracle bets on 'net appliances

By Dan Richman
SAN FRANCISCO

Before a standing-room-only crowd of 3,500 developers last week, Oracle Corp. CEO Larry Ellison held aloft the future of computing. Or so he hoped.

Ellison displayed prototypes of the Network Computer (NC), a family of inexpensive, monitorless and diskless Internet-access appliances that he proclaimed will outnumber PCs by the year 2000.

In theory, information systems departments could deploy the appliances as online banking devices, retail kiosks or low-cost terminals for thousands of employees [CW, Jan. 29].

One prototype, a palmtop-size unit that cost $295 to build, was connected to a standard color television and appeared to access the Internet and play audio and video samples in real time.

Oracle's Larry Ellison *predicts Internet appliances will bypass PCs by the year 2000*

The prototypes were built to Oracle's specifications by Acorn Computer Group PLC in Cambridge, England.

Ellison said employees, at-home users and students who can't afford PCs or don't want to deal with their complexities will compute and access the Internet through NCs.

Making it easier

The NC sounds appealing. End users wouldn't have to deal with backups and software upgrades, which would occur on the Internet server. Employers could easily maintain applications and ensure that users are working from the same versions.

But analysts and users in the audience had many reservations.

"The prices of PCs will probably be down to match the prices of the NC by the time it comes out, so why would anyone want it?" asked Al Hilwa, a senior analyst at Gartner Group, Inc. in Santa Clara, Calif.

Aron Dutta, a principal at Booz Allen & Hamilton, Inc., a consultancy in New York, said, "I do buy the idea, and I liked what I saw. But we're going to be very cautious about whether it's truly economical, easy to implement and something our users need. That will take a good while to determine."

"I think Oracle underestimates the capabilities of the average computer user to use a PC and also undervalues being able to use the huge range of software on the market," said Donald Feinberg, another Gartner analyst.

Sun Microsystems, Inc. and IBM have embraced this vision and are working on similar products. Microsoft Corp. calls the idea misguided [CW, Nov. 13].

Revealing new details of Oracle's plan, Ellison said NC users will get word processing, spreadsheet, presentation and data-access applications as well as scheduling and voice-mail capabilities.

All will be compatible with Microsoft's Word, Excel and PowerPoint packages but won't have nearly as many features.

None of the NC models will have more than 8M bytes of memory, but some will be available — at extra cost — with RAM caches of less than 1M byte. Some models will have small, monochrome LCDs. All will cost less than $1,000 to manufacture.

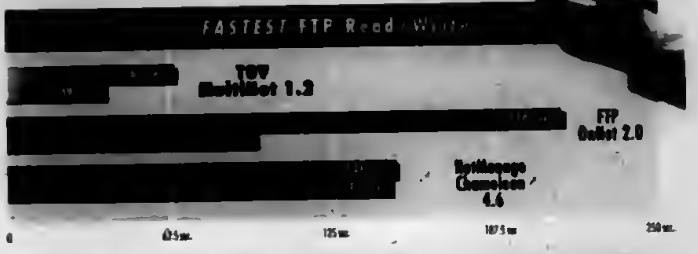
Oracle's Internet terminal isn't as loony as it sounds. See Editorial, page 36.

THE FASTEST TCP/IP APPLICATIONS FOR WINDOWS.

FASTEST FTP FILE TRANSFER

MultiNet's FTP client is between 2X and 3X faster than either OnNet or Chameleon when transferring files over a TCP/IP network.

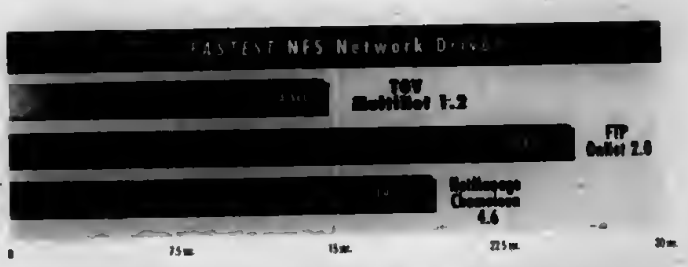
Results shown based on transferring a 20MB file between a Windows PC and a Sun SPARC server.



FASTEST APPLICATIONS LAUNCHING

MultiNet's NFS client is nearly 2X faster than OnNet and 50% faster than Chameleon when launching applications from an NFS server.

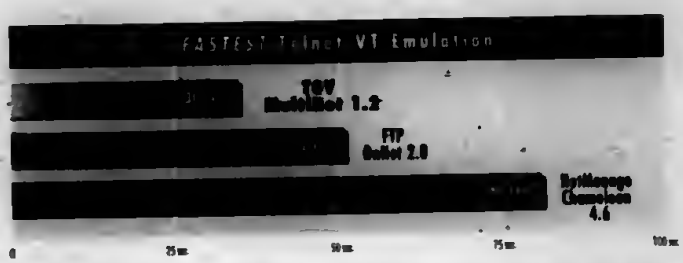
Results shown based on launching Microsoft PowerPoint 4.0 and opening a 1MB presentation from an NFS network drive on a Sun SPARC server.



FASTEST HOST APPLICATIONS DISPLAY

MultiNet's Telnet VT emulator refreshes multiple windows over 50% faster than OnNet and more than 2X faster than Chameleon. Each MultiNet window always displays the correct VT screen behavior.

Results shown based on running a freely available terminal test in three windows simultaneously on a Windows PC from a Sun SPARC server.



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All testing performed by LanPlane Consulting, Inc. Testbed consists of a DX2-66 Intel 486 PC running Windows for Workgroups 3.11 with 16MB memory, SCSI disk controller, 3Com 3C509 Ethernet card linked with 10base2 cabling to a Sun Microsystems SPARCstation 10 running Solaris 2.5 with 32MB memory. Test results are the averages derived from multiple iterations. Each vendor's TCP/IP product was installed using the default configuration. ©1996 TGV Software, Inc. Tel: 408-457-5200 Fax: 408-457-5205 Email: sales@tgv.com Web: http://www.tgv.com MultiNet and the TGV logo are registered trademarks or trademarks of TGV Software, Inc. in the United States and various foreign countries. All other trademarks are the property of their respective owners. Developer tested only. Russell makes no warranty with respect to this product. 040/1

Notebooks plow 133-MHz Pentium path

By Mindy Blodgett

The trend toward faster, high-performance multimedia notebooks will continue this week as several leading vendors unveil laptop computers with Intel Corp.'s 133-MHz Pentium processor.

Intel will release the long-awaited 133-MHz chip for notebook computers. The chip's 66-MHz CPU bus speed is an increase over current 50- and 60-MHz bus speeds.

Some industry observers predict that the fastest growth in the notebook market will be in the low-end, "value" portion of the market, but others say many users are interested in the faster multimedia notebooks.

"For those users who need multimedia for traveling road shows, we will definitely keep up with the faster chips," said Thomas Balzarini, enterprise network manager at Associated Grocers, Inc. in Seattle.

"The multimedia laptops add that extra touch of professionalism to a presentation that has become expected. And price isn't that important at that point — we'll spend the money. It's the technology we want," he said.

Ken Dulaney, an analyst at Gartner Group, Inc. in San Jose, Calif., said corporate users will always seek the fastest, most sleek laptops.

"The high-end notebooks are where you introduce the new technology, the fastest processors, the biggest screens," Dulaney said. "The corporate users will pay for it."

Notebook lineup

These are the notebook makers that will announce 133-MHz machines this week:

- Toshiba America Information Systems, Inc., the market leader, will ship the Tecra 720CDT in April. It will cost $7,499.
- Texas Instruments, Inc. will ship the TravelMate 5300 later this month. It will cost $5,499.
- AST Research, Inc. will ship Ascentia J50 and Ascentia P50 multimedia laptops. Pricing for the new models starts at $3,699.
- Hewlett-Packard Co. will ship the OmniBook 5500 in May. Pricing wasn't announced.

And IBM PC Co., Dell Computer Corp., Compaq Computer Corp., Digital Equipment Corp., Sharp Electronics Corp. and NEC Technologies, Inc. plan to release notebooks with 133-MHz chips.

Marshall Fernholz, network control manager at the American Medical Association in Chicago, said he will continue to buy laptops with faster chips for users who need them. He said he needs laptops that feature long battery life and modularity, but availability is his primary concern.

"I have been tremendously frustrated in the past year with announcements [that are followed by] production shortfalls," Fernholz said. "Announcements... don't impress me anymore."

He said he bought Compaq laptops because the vendor was able to ship the machines immediately.

Notable facts

Less than $2,000	More than $4,000
75-MHz Pentium	100-MHz, 120-MHz and 133-MHz Pentium
8M bytes	16M bytes, as in the Toshiba Tecra 720CDT (pictured)
10.4-in. screen	11.3-in. and 12.1-in. screens
Nickel metal	Lithium ion

Cybercrawl

CONTINUED FROM PAGE 1

seems to take a long time just to make a simple request for a document."

Internet users are starting to complain more vociferously about frequent delays when they perform routine tasks that used to be instantaneous, such as accessing Web pages. Worse, electronic mail can lose its way for hours or days. The longest delays seem to occur at midday and at the end of business hours in the U.S., when the greatest number of people are likely to be on-line.

"Our busiest time is mid-afternoon between 11 a.m. and 2 p.m., and that's mainly because everyone is eating their lunch at their desk and surfing the Web," said Oliver Knowlton, director of operations at Time's New Media division, which runs the Pathfinder site.

The big pictures

Certain high-bandwidth applications, such as multimedia applications, put even more of a strain on servers and connections on the same section of the Internet. A big graphic might be several hundred kilobytes in size, but video and audio can run into several megabytes or more — hundreds or thousands of times bigger than simple pictures.

The slowdown is particularly vexing for those who use small and consumer-oriented Internet service providers. It is also trouble for users who get their Internet access through consumer on-line services such as CompuServe, Inc. and America Online, Inc.

Much of the problem stems from a combination of the Internet's network topology and the type of wide-area access employed at individual user sites.

The Internet comprises smaller networks that are linked together, rather than a single entity. It is more analogous to a road network that spans the world than it is to a single highway.

Small service providers, which often serve one or two area codes, feed their traffic into larger Internet service providers and so on. The connections are made continuously until all the traffic in the U.S. is routed through fewer than a dozen giant service providers. These include UUNet Technologies, Inc., PSInet, Inc., MCI Communications Corp., AT&T Corp. and Netcom Communications Corp. Several of them are now bulking up with high-speed network switches.

The Internet is essentially a victim of its own success. The number of computers connected to the Internet was 9.5 million in January — nearly double the 4.85 million computers counted one year ago, according to Network Wizards in Menlo Park, Calif.

Lost count

Because of the decentralized nature of the Internet, there is no precise count of users. But a recent survey by Nielsen Media Research and the CommerceNet consortium placed the number at 24 million late last year. Estimates put growth rates at 10% to 15% per month or higher.

Users who connect to big service providers report that things move along briskly — if they have fast T1 or T3 connections.

But many users who rely on dial-up connections are hurting, regardless of what size service provider they are linked to. This especially means trouble for companies looking to reach out to consumers, because consumers are most likely to use slower connections from congested Internet service providers or on-line services.

The major service providers are talking about increasing their backbone lines that span the nation, although they won't give specifics. And experts have predicted that the major Internet service providers will, by the end of the year, offer premium plans. Those who pay a higher price will get guaranteed fast throughput and high reliability.

How to avoid gridlock on the information superhighway

- Get a high-speed connection with a big Internet service provider.
- If you're not in a big city, make sure the Internet service provider has high-speed access to your town. It does you little good to have a T1 line to your door if the service provider's access from your town is a 56K bit/sec. line.
- If there are particular sites on the Web that your users access frequently, arrange to copy those sites to a cache on your corporate network.
- If your company's Web page is wildly popular, post multiple mirrored copies on multiple servers.

The perils of popularity

Some of the companies that run the most popular sites on the Internet are laying in extra resources to ensure that delays in getting through to their servers don't exacerbate overall problems.

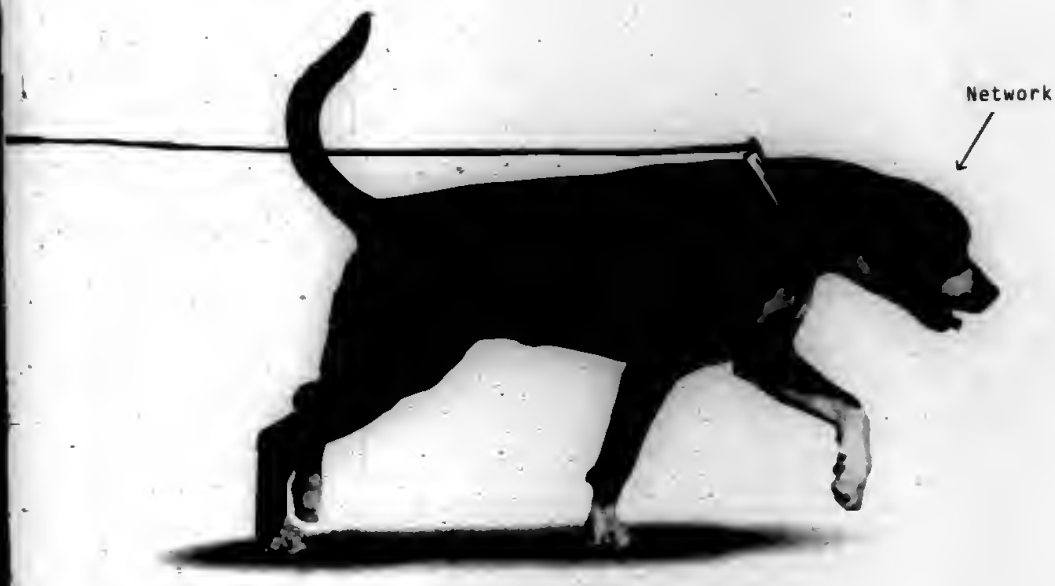
Turner Broadcasting in Atlanta, which runs the Cable News Network site (http://www.cnn.com), subscribes to two Internet service providers, BBN Planet and MCI, for redundancy, said Samuel Gassel, a senior technical specialist at Turner.

And Pathfinder (http://pathfinder.com), run by Time, Inc. New Media, uses redundant servers to keep access times clear. The site runs on four Sun Microsystems, Inc. SPARC 1000E servers. Special highly popular content gets its own server.

For instance, last month, when the *Sports Illustrated* swimsuit issue came out, Time ran that content on a dedicated SPARC Ultra, with 256M bytes of RAM. That way, much of the content could be kept in RAM, where access times are fast, and not accessed from a hard disk, which would be slower.

— *Mitch Wagner*

Digital plans to market its blazing-fast Alta Vista search engine. See page 65.



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Vendors fortify internetworking

Products lift network reliability, performance bars

By Bob Wallace

Cisco Systems, Inc., Hewlett-Packard Co. and 3Com Corp. last week weighed in with a host of products that should raise the bar for network flexibility and performance.

"I've been searching far and wide for an ISDN remote-office Token Ring router that would help us eliminate downtime at our offices," said Jim Fay, director of strategic technologies at PMI Mortgage Insurance Co. in San Francisco. "We have a frame-relay network linking our sites, but if we lost one of the links, we could use ISDN as backup."

Cisco last week announced just what Fay's been looking for with the 2525 remote access router. It has one Token Ring port and can support Integrated Services Digital Network (ISDN) and two other wide-area network links. The vendor also rolled out the 2424, which has an Ethernet port and the same WAN options.

HP stepped up with two new high-performance switches that were designed to eliminate bottlenecks by providing dedicated bandwidth between users and heavily used computing resources.

The vendor's new AdvanceStack Switch 200 was designed for small and medium-size workgroups. Its fixed configuration has 16 switched Ethernet ports for users and two 100VG-AnyLAN ports for fat pipes to servers. A 100M bit/sec. Ethernet technology, 100VG-AnyLAN competes with Fast Ethernet.

HP also unveiled the AdvanceStack Switch 2000, a segment switch that lets users mix and match shared media and switching modules. It has a 1G bit/sec. backplane and six slots that can be filled with four-port Ethernet modulea and two-port 100VG-AnyLAN modules.

3Com launched a suite of low-cost, feature-packed products — including Ethernet hubs, ISDN routers and print and fax servers — targeted at remote sites on corporate networks and small office operations.

The OfficeConnect products are aimed at sites with fewer than 20 users that lack the luxury of an on-site information systems staff to run the network.

Foreign market

The one shortcoming of the 3Com product suite is that two of the first three OfficeConnect routers support only ISDN WAN links. ISDN is far from fully deployed in the U.S., and that means the routers may be more successful outside the U.S.

"We're a global company, and ISDN is white-hot in Europe," said 3Com Chairman and CEO Eric Benhamou. But, he added, "ISDN deployment is growing very, very rapidly here in the U.S. So we decided to go with ISDN first."

Analysts expressed concern about the routers' reliance on ISDN. "ISDN alone isn't enough to cut it today in the U.S., so 3Com had better be planning to add support for other WAN links soon," warned Daniel Briere, president of TeleChoice, Inc., a Verona, N.J., consultancy.

3Com officials said frame-relay WAN support will be added soon, and they pointed out that the third of the three OfficeConnect routers can use private lines. All three routers are available now.

Base pricing for the 2524 and 2525 is $900 and $1,400, respectively. Both are shipping now. The HP AdvanceStack Switch 200 will cost $3,399; the AdvanceStack Switch 2000 will cost $1,999. Both will ship May 1. Pricing for the OfficeConnect products starts at $229, and all are shipping now.

Users can outsource remote access, thanks to a new switching package. See page 58.

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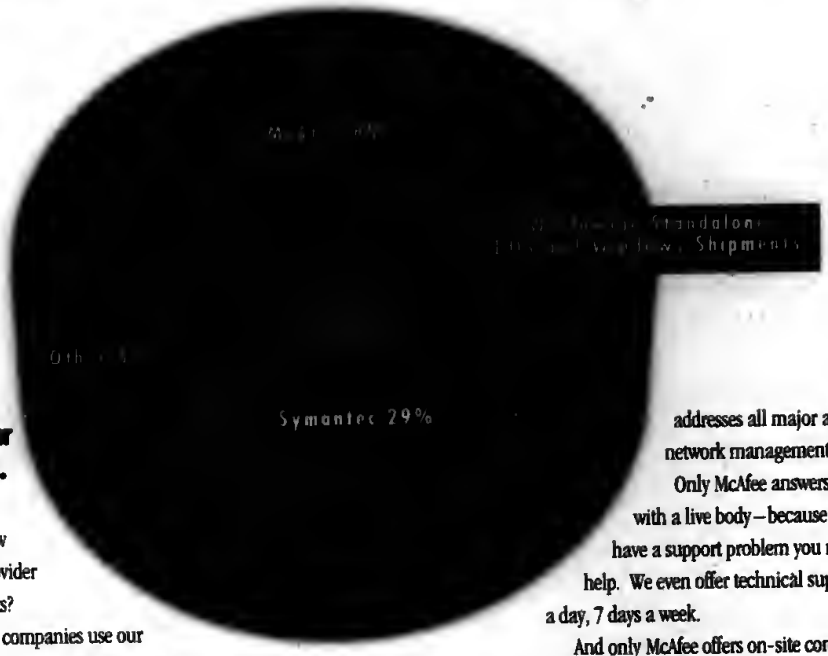

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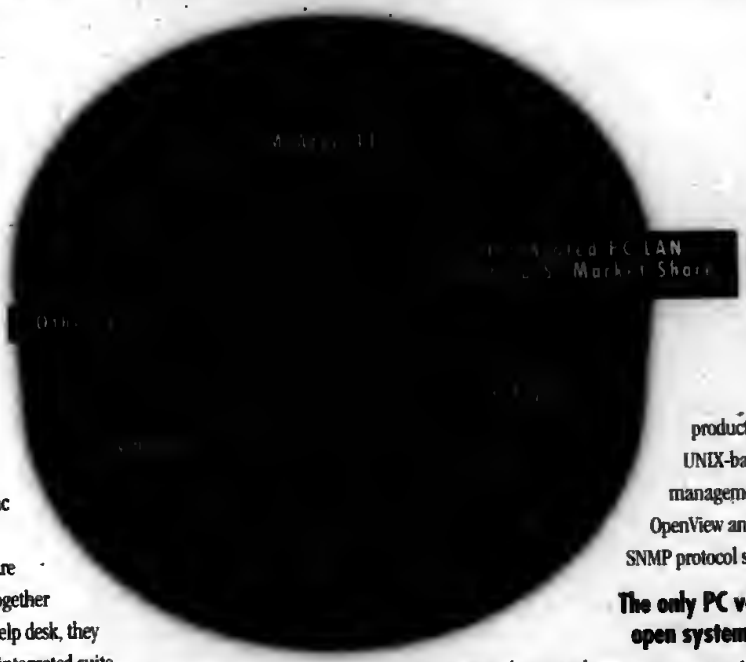

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TeamWare to put stamp on 'net mail

Server to address management, security concerns

By Tim Ouellette

Business users will be able to take a closer look this year at running their corporate electronic-mail systems via Internet software. That will cut costs and free them from the limits of proprietary LAN- and host-based systems.

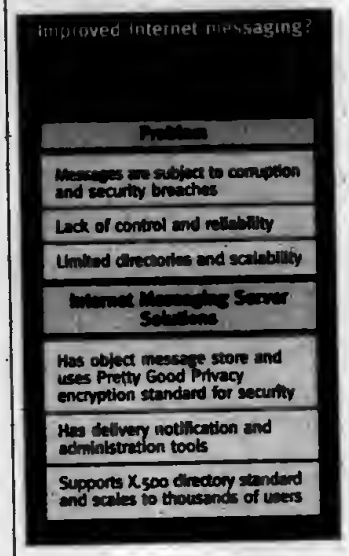
But Internet E-mail users have gotten what they paid for so far. It doesn't cost much, but it lacks the security and management features corporations require for their messaging environments.

That may change later this year when TeamWare releases the Internet Messaging Server. The product promises to fill the gaps in most Internet E-mail packages, which tend to focus solely on client features.

For example, most Internet mail packages offer few enterprise-user administration tools, store messages as easily breached or corruptible flat files, can't confirm delivery and provide directories limited to E-mail addresses only.

But Internet Messaging Server, which is due to ship by midyear, will be integrated with TeamWare's Embla client Internet mail software in order to provide more capabilities. These include delivery notifications, server and user administration tools, server clustering to scale up to thousands of users, X.500 directory support and synchronization, and object file storage for messages and message encryption.

Most LAN-based and upcoming client/server messaging products from Microsoft Corp., Lotus Development Corp. and Novell, Inc. include these features.



TeamWare in Santa Clara, Calif., is targeting users who are looking to move from or augment their LAN-based mail systems — such as Lotus' CC:Mail and Microsoft's Mail — with intranet technology. Internet Messaging Server can pass messages and synchronize directories with proprietary LAN-based systems if users want to work in a mixed environment.

In addition to supporting standard Internet messaging protocols, Internet Messaging Server will be the first major commercial server to support Internet Mail Access Protocol (IMAP), said Mark Levitt at International Data Corp. in Framingham, Mass. IMAP lets off-site users select which messages or pieces of messages to download from the server.

One user who runs the Embla client software said he likes the IMAP support because his remote users can avoid downloading large engineering drawings when on the road. This eliminates lengthy waits for large message file attachments to download, said Mike Petkoff, information systems director at Howmet-Cercast, a Georgetown, Ontario, manufacturer.

Pricing for Internet Messaging Server will be $49 per user for the server and $20 per client. Users can use their own Simple Mail Transfer Protocol mail clients with the server if they choose.

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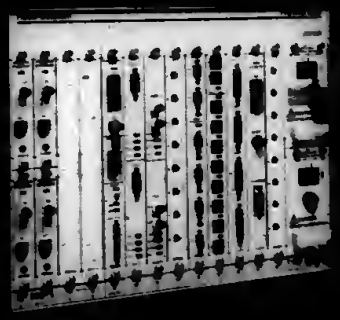

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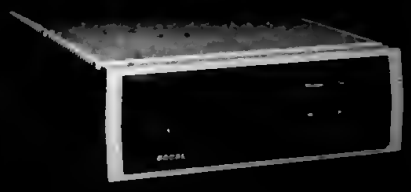

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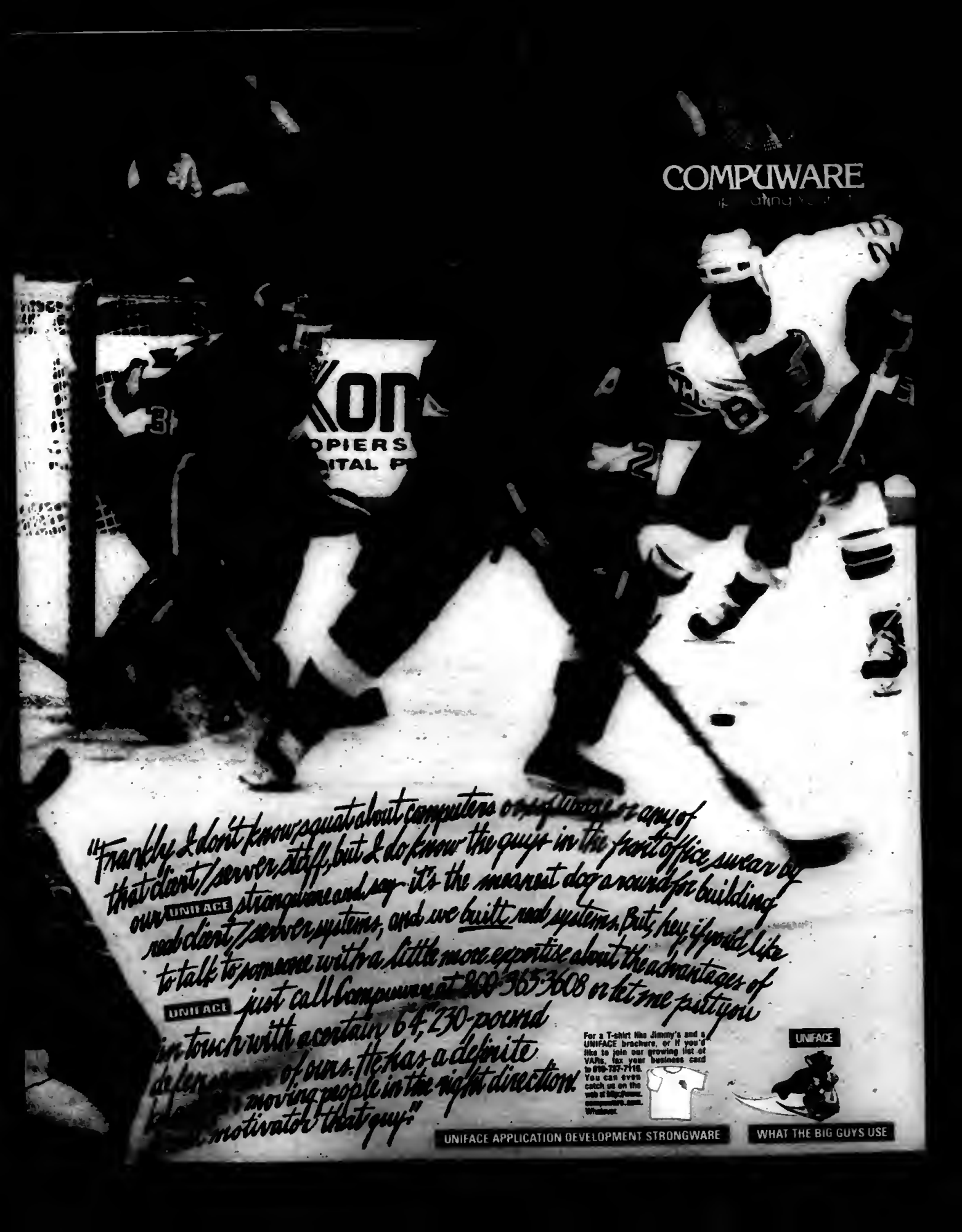
A few thoughts about motivation and UNIFACE application-building strongware from Jim Rutherford, President/General Manager, Hartford Whalers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WHAT THE BIG GUYS USE

Insuring Web success

CONTINUED FROM PAGE 1

they're weak in dealing with their customers," said John Alexander, former chief information officer at insurer Unum Corp. in Portland, Maine, and current president of Business Technology Consulting, Inc., also in Portland.

Those weaknesses are especially evident when comparing insurers to, say, Fidelity Investments or Citibank NA. Those financial firms offer customers "slick telephone responses" because they are used to scratching for new information for their clients on a minute-by-minute basis, Alexander said.

More than 120 insurance companies worldwide have launched Web sites since 1994. The majority offer little more than advertising and marketing.

To take a look at some of the more innovative sites, check out these Web addresses:

- http://www2.pcy.mci.net/marketplace/aetna/
- http://www.spectra.net/mall/aig/
- http://www.ittharfford.com
- http://www.prudential.com/
- http://www.massmutual.com/
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"The insurance industry isn't used to that kind of pressure," he said.

That's why market leaders such as Aetna and The Prudential Insurance Company of America are leaning heavily on data warehousing, Internet services, business process re-engineering and other leading-edge information systems strategies to bring them closer to their customers.

And consider this unusual approach for an insurance company: Visitors to American International Group's Home Page on the World Wide Web are now offered a free gift for browsing the Spectra.Net Mall — $2,000 in accidental death and dismemberment insurance.

Rock of Gibraltar

"Our vision is to become a very customer-focused organization," said Bill Friel, the recently named CIO at Prudential in Newark, N.J.

Prudential has instituted its Gibraltar project, an automated application process that focuses on the firm's midlevel insurance customers. Those clients, who fall into the $5,000 to $50,000 insurance policy range, represent 23% of the 500,000 policies Prudential wrote last year.

In the past, Prudential's 14,000 customer agents would spend up to an hour filling out 10- to 12-page applications on each prospect. The process was further hindered by Prudential's bureaucratic setup, in which customer applications were passed among a multitude of departments over a four- to six-week period before a policy was written, said Ernie Testa, vice president of underwriting at Prudential's South Plainfield, N.J., office.

Today, case managers gather all the customer information over the phone and enter it simultaneously into an event-driven, IBM OS/2 application. That frees up Prudential's agents to focus on selling products.

The insurer can now generate an insurance policy — from start to finish — in about five days instead of several weeks, Testa said. And beginning this June, Prudential plans to extend these capabilities to the rest of its portfolio, such as its legacy and estate policyholders. Those customers have assets covered by $50,000 to $30 million in insurance.

In June, the insurer also will move from its IBM OS/2 system to Microsoft Corp.'s Windows NT environment, which is becoming the desktop standard at Prudential. The operating system transition should be completed by the end of the year, Testa said.

Aetna's answer

For Aetna, the end of the rainbow is a massively parallel processing (MPP) database system that will crunch its numbers quickly. It already has multiple gigabytes of data on its thousands of 401K accounts, annuities and other customers

In 1984, two-thirds of the insurance industry's revenue came from life insurance products, according to the American Council of Life Insurance, a Washington-based industry trade association.

With sales of life insurance flat today, two-thirds of the industry's sales now come from pension products such as 401Ks and annuities.

The Hartford, Conn.-based firm plans to expand its data warehousing efforts beyond its IBM mainframe-based DB2 and Unix-based Sybase, Inc. platforms to an MPP architecture, said Max Gould, the firm's chief technology officer.

Aetna will lonk at IBM's SP2 parallel processing machines, Informix Software, Inc.'s relational database management software and other parallel systems before it selects an MPP environment in the next few months.

'net coverage

Electronic commerce "is quickly going to become a point of differentiation between insurance and financial services companies," said Bruce Barnes, vice president of investment product systems at NationWide Insurance Cos. in Columbus, Ohio.

Given the number of electronic commerce partnerships being formed on an almost daily basis, "If you stand in the middle of this sandstorm, you're going to be blown away," Barnes added.

Because NationWide's financial services pages are still "under construction," its home page is little more than a static, historical sketch. But that will change when the nation's 25th largest life insurer adds pages for its investment products in June.

With the exception of American International Group in New York and The Signature Group in Schaumburg, Ill., no other companies sell insurance products over the Internet, said Jean C. Gorz, manager of research at Life Office Management Association (LOMA), an Atlanta-based trade association.

NationWide Insurance's Bruce Barnes *says insurers can use the Web to set themselves apart from rivals*

Gorz is author of a LOMA report that evaluates the World Wide Web sites of every known financial services company active in cyberspace.

Besides, insurers still have to vault the cultural barriers to online sales. "At this point, most insurance products are still sold rather than bought, and no one has figured out how to make a push sale through the Internet," adds John Alexander, president of Business Technology Consulting.

Also unclear is whether insurance companies will bypass insurance agents and sell products directly to customers on-line. Larger companies like Prudential are using their Web sites to pass along prospects to their agents, Gorz noted.

Independent insurance agents aren't sitting still, either. Organizations such as QuickQuote and InsuranceQuote have Web sites that offer on-line insurance price quotes without naming the insurer. — *Thomas Hoffman*

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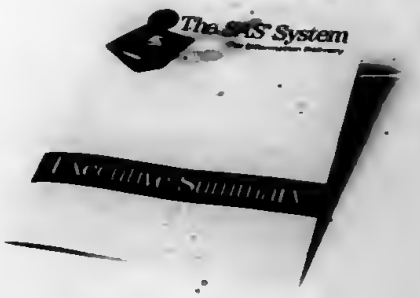

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Computer Industry

SGI + Cray = scientific powerhouse

By Michael Goldberg

Silicon Graphics, Inc. (SGI), known for its jazzy workstations favored by Hollywood special effects artists, last week took aim at the high-end technical market by agreeing to acquire Cray Research, Inc.

The deal, which should be finalized by the summer, will instantly create the biggest player in the high-end market for scientific systems. Such systems include those for projects such as simulating the expansion of the universe or seeking underground fossil fuels.

Users of Cray systems said it was common to find SGI workstations in their labs, so the deal made sense to them.

"I'm rather positive about it. [Cray] has had some economic problems for some time now. Hopefully, this will add some stability," said Morris Jette, group leader in the large-scale systems group at the National Energy Research Supercomputer Center in Livermore, Calif.

Together, SGI and Cray owned 43% of the $1.9 billion scientific and engineering market last year, far ahead of rivals such as IBM and Digital Equipment Corp., according to Smaby Group, Inc. in Minneapolis.

But SGI's merger with supercomputer pioneer Cray isn't without technical challenges. It could take several years to showcase the complementary skills of the two firms in a unified product line, observers said.

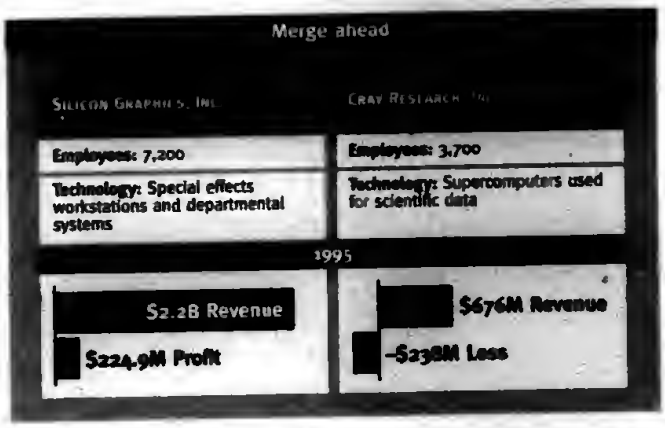
Besides workstations, SGI sells its Challenge and Power-Challenge departmental servers, combining the systems with its Onyx graphics engine for scientific users. The servers and engines use SGI's Mips Technologies, Inc. microprocessors. Cray offers systems that cost more than $5 million such as its T3D and T3E, which run on Digital's Alpha chips, and also sells business models with Sun Microsystems, Inc. SPARC processors.

While Cray can offer its experience and know-how in engineering large systems, uniting the two companies' product lines won't be simple, said Rich Partridge, an analyst at D. H. Brown & Associates in Port Chester, N.Y. Unlike Hewlett-Packard Co.'s purchase last year of supercomputer vendor Convex Computer Corp., Cray and SGI use different hardware platforms.

"In [the SGI/Cray] case, the product lines don't mesh together as smoothly," Partridge said. "I don't think either of them have figured out quite how it will all work."

Willy Shih, marketing director at SGI's advanced systems division, said the two firms share a vision for high-performance systems that use complementary metal oxide semiconductor (CMOS) chip design. Cray uses CMOS technology now, and SGI will accelerate its efforts to implement it, Shih said.

Staff writer Juan Carlos Perez contributed to this report.



Baan aims at electronics industry

Integrated client/server package rivals SAP offerings

By Julia King

High-flying Baan Co. is aiming to keep the pressure on market leader SAP AG by enhancing its Unix-based client/server software for the multibillion-dollar worldwide electronics industry.

The Dutch applications vendor last week said it will integrate its Triton software suite with specialized planning and electronic data interchange software from I2 Technologies, Inc. in Irving, Texas, and Premenos Corp. in Concord, Calif.

Aspect Development, Inc. in Mountain View, Calif., will contribute electronic component software and supplier management software to the mix. The final product will be marketed to suppliers and manufacturers in the electronics industry.

"Baan is going after the entire supply chain," said Anil Gupta, director of industry marketing at Baan.

Baan isn't the only package provider to target key vertical markets. SAP and Oracle Corp. also sell enhanced software suites for electronics, automotive, oil and gas and consumer packaged-goods companies.

Baan Co

Corporate headquarters: Ede, Netherlands, and Menlo Park, Calif.

Primary product: Triton Unix-based enterprise client/server software

Customer sites: 2,700 worldwide

1995 revenue: $216 million

But analysts seem to agree that Baan may be in the best position to sell in to manufacturing companies.

"If the primary issue is manufacturing, then Baan is tough to beat," said Bruce Richardson, an analyst at Advanced Manufacturing Research Corp. in Boston.

"Baan's legacy comes out of helping companies make things, whereas most people [who buy] SAP want to re-engineer their financial systems," he said.

Baan also brings its Orgware to the mix. Orgware is a set of automated software configuration methods and tools.

"Orgware is a system organizer that lets a customer define an overall business model, then connect that [model] to our software to automatically configure the system," Gupta said.

"It's a way to configure our product quickly and redefine it quickly to meet changing business requirements," he added.

Orgware and the flexibility it offers are among the chief reasons Advanced Micro Devices, Inc. in Sunnyvale, Calif., chose Baan's software, according to Bill Souders, director of sales systems at the $2.4 billion microchip manufacturer. AMD plans to install the software at 60 sites worldwide.

Baan said it will join with two consulting firms — KPMG Peat Marwick in Montvale, N.J., and Origin Technology, Inc. in Murray Hill, N.J. — to develop Orgware-based business models.

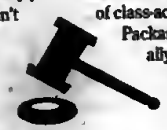
Suits over used PCs end

States to continue separate inquiries

By Jaikumar Vijayan

It ain't over till the fat lady sings.

PC makers Compaq Computer Corp. and Packard Bell Electronics, Inc. last week settled lawsuits that accused each other of selling used computers as new. But the cross-litigation between the two companies started an inquiry process their settlements can't stop.



The dispute between the two companies triggered investigations — still ongoing — from attorneys general in 20 states into the recycled-parts policies of major PC vendors, including Compaq and Packard Bell.

Such investigations could result in formal guidelines regulating the use of recycled parts in new computers. Such guidelines don't exist. It could also lead to stricter labeling and disclosure requirements for PC vendors, said Esther Roditti, editor and publisher of the "Computer Law and Tax Report," a newsletter in New York.

Last week's settlements brought an abrupt end to a bitter and very public slugfest between Compaq and Packard Bell. Ten months after the battle started, both firms have agreed to drop all charges against each other.

The dispute started last April when Compaq filed suit in federal court, accusing the Sacramento-based Packard Bell of using recycled parts in computers that the company was advertising and selling as new.

That move triggered investigations by attorneys general in several states and prompted a spate of class-action suits filed against Packard Bell, which eventually settled them for about $1 million. The company also agreed to more clearly label computers containing used parts.

The dispute escalated in November when Packard Bell struck back, countersuing Houston-based Compaq with charges that Compaq distributors were reboxing used computers and selling them as new.

"I think Compaq feared that a trial would bring additional evidence that would embarrass them," said Marshall Grossman, Packard Bell's attorney.

"No one at Compaq is afraid of anything at Packard Bell. Compaq feels it has proved its point," said William Coston, Compaq's attorney.

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Getting intimate

Oracle's demonstration of a prototype "Internet terminal" last week drew hoots of derision from industry pundits, but it may be Oracle that has the last laugh.

The idea isn't as loony as it sounds.

The problem with Internet terminals is public relations, not utility. Touted first as low-cost PC replacements and later as a kind of crippled application delivery system, these devices have been defined less by what they are than by what they are not.

The fact is, 'net terminals won't replace PCs any more than your tabletop television replaced the big-screen tube in your living room. And they could expand computing into niches where computers have been impractical because of cost, size or environment. Apple Fellow Alan Kay calls it "intimate computing," the idea that the computer and the network become as accessible as an electrical outlet or a phone.

Consider: You walk into a conference room for your 2 o'clock meeting, log on to your 'net terminal and grab the agenda from the departmental intranet server. During the meeting, you need to check your competitor's 10K report, so you pluck it off the SEC's Edgar database. Just before the meeting breaks up, you schedule the next meeting by logging it in to your department's server-based group calendar.

Or perhaps you're into cooking. Instead of keeping your recipes in a paper file, you store them on the network. You use the 'net terminal in your kitchen to select your menu from the file. A Java applet then generates a list of ingredients based on your choices and E-mails an order to the market, which delivers it two hours later.

Both applications are practical and useful with today's technology. Neither requires a high-resolution color display, a gigabyte of local storage or acres of memory. Both can be done with a $500 network device.

The PC establishment has lined up against Internet terminals because they see them as a threat to their hegemony. That's looking at it the wrong way. People won't stop buying PCs just because they can get cheap computers that hang on the wall. In fact, they'll probably buy more PCs. How many TV sets do you have in your home?

IS people should be aware of the potential of 'net terminals to extend the ATM, the cash register or the telephone into new business areas. Don't think of them just in terms of what they're not.

Paul Gillin, *Editor*
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http://www.ultranet.com/~pgillin

Another side to remailers

I note that you have decided anonymous Internet remailers are a bad thing ["'Stealth E-mail' poses corporate security risk," CW, Feb. 12].

In doing so, you peddle the line of many authoritarian governments around the world that seem to think maintenance of good order requires them to be able to control everything we say and do.

What your article didn't mention was the huge potential this type of service has for doing good. Imagine the plight of someone in the military who wishes to get involved in on-line debates on gay issues. Or that of the police officer who wishes to expose corruption in the department. Or that of the employee who knows that his company's product is dangerous to the public.

Anonymous remailers allow people in such situations to quite safely post on the Internet information that may be of great importance.

It is also worth noting that most remailer operators have mechanisms to prevent the more obvious abuses. If you receive hate mail via a remailer, for instance, the operator of that remailer can usually ensure that you get no more.

Gary Elmes
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It's all in the timing

After reading "Human factors" [Alt.cw, CW, Feb. 12], I conducted my own informal study of the amount of time and effort required to look up a friend and schedule a lunch on a personal digital assistant.

On my Motorola Envoy, 18 clicks and 24 seconds were needed to complete the task. On my Newton 110, 11 clicks, 4 words, 1 correction and 50 seconds were needed.

Unfortunately, my Week-At-A-Glance planner took more than 4 hours, 16 page turns and 9 digits dialed. Since the PDAs have replaced my planner, I had to go home, find it, search for the name (which turned out to be on a loose business card hiding in the back) and then call my friend.

Considering all the other benefits that my PDAs deliver, I think I'll put my planner back in the closet or maybe just throw it away, since it's for 1993.

Bruce Tong
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The education of a 'computer junkie'

The tune "Take My Hand, I'm a Stranger in Paradise" comes to mind as I look back over my readership of *Computerworld*.

I've read it a little more than a year, and while many of the stories and much of the coverage are beyond me, I appreciate your coverage of PCs, the Internet and the general computer industry. Computers have always been an important part of my life; my father was a computer programmer/systems analyst, and I read *Datamation* as a child.

In 1984, when we got our first XT to run the business, things took off. I became a "computer junkie" overnight, subscribed to six computer magazines and was on my way. I wasn't so much interested in programming as in how computing actually could help us work smarter.

Thanks again for a fine magazine. It is an education in itself.

Peggy Landt
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Applets won't do

I have to disagree with Eric Schmidt's "Not such a dumb idea, after all" [CW, Feb. 5]. His idea of an Internet terminal will have people downloading nonexistent "small applets" from the Internet to run on their little boxes. How many people do you know who use small applets exclusively? Most of my users run large applications such as Word and Excel from a server on my local network. Even if there were enough small applets available, I can't imagine waiting for one load from the "Information Dirt Road."

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■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Verbatim

From a report by Donald A. DePalma, an analyst at Forrester Research, Inc. in Cambridge, Mass., predicting that Sun Microsystems, Inc.'s Java technology will accelerate the use of software objects in large companies:

The Internet is the killer application that will accelerate object usage. The Internet has transformed objects into a mass-market opportunity that is attracting the best and brightest developers from around the world.

The real growth is still eight to 24 months away, when Java and competing technologies are more complete.

The object-oriented, distributed architecture of Java will enable customers to download platform-neutral application components as needed over the Internet, with minimal customer-support costs.

[Already,] objects have moved off the drawing boards and into production in 50% of Fortune 1,000 companies. The number of corporations doing nothing with objects has dropped to 6%. [Reusability] is still seen as the primary benefit of object-oriented software.

From a forecast by Darvis W. Cormier, industry consultant at Deloitte & Touche Consulting Group in Wilton, Conn.:

The once-dominant IBM will reemerge — with new information technologies and competitive efficiency — as a dominant technology company, a reality that will hurt its competitors.

Some of the challenges for IBM include being able to migrate their proprietary AS/400 server family, the world's largest installed computer system, to a Unix-based system. At the same time, they must also grow their RS/6000 family. The successful positioning of one of these server product families would enable [IBM] to reemerge as a major client/server [vendor].

Cary Grant

Why smart firms sometimes act dumb

Rick Frazier

With 20/20 hindsight, the reasons Apple Computer is in a mess seem obvious. Apple should have allowed cloning. It should have changed its business model, been more innovative or slashed costs, the pundits say.

Apple was trapped by its own success. Now it's time to regain its lead in usability.

So why did Apple apparently try to whistle its way through a graveyard that is so evident today? In a word: success. During any successful company's life cycle, there comes a time when it risks being trapped by that success.

As long as an organization repeats a successful pattern and continues to grow, anyone who challenges the pattern is shunned. New hires see proof that the formula works — power-cappuccino machines on each floor and exotic meals in the company cafeteria. New CEOs aren't immune. John Sculley came to Apple with a well-deserved reputation for being a great marketing mind and left Apple as a converted "propeller head."

During an organization's mature stage, anyone or anything that could disrupt the status quo is perceived as a threat and dealt with accordingly. But one of the great paradoxes of change is that the perceived threat is often the solution. Movie studio executives initially regarded the VCR as a mortal threat and fought the new technology at every turn. Yet video sales are now the most lucrative source of revenue for the studios.

Apple executives, blinded by their superior technology, considered clones a threat rather than an opportunity. The high profit margins of Apple's proprietary game plan again and again overrode advice from inside and outside the company to permit the manufacture of clones. Apple sacrificed market share for margins, and that turned out to be a losing strategy.

The same pattern repeats itself throughout commercial history. The urge to circle the wagons, to protect what exists — physical assets, customers or fat margins — is understandable, but it's also what makes change so difficult even for the ablest of leaders.

It often takes an impending crisis for a successful, mature organization to break free. Once the organization gets a dose of humility, it's more open to new ideas or previously dismissed ideas.

When the massive investment in the old system, structure and pattern has become less of a barrier to quick action, the organization reaches its moment of truth. And that's where Apple finds itself today. The challenge that faces Apple's new CEO, Gilbert Amelio, is to nudge the company further off-center, without pushing it off the edge.

Some analysts say Apple needs to "grow up" and act mature, and others suggest it needs to be more innovative. But the claim that Apple lacks technical innovation is absurd to anyone who keeps abreast of the company's development efforts. As for growing up, many indicators suggest Apple already has achieved this bureaucratic state and doesn't wear it well. I'm reminded of the movie *Big*, in which Tom Hanks plays a 10-year-old who is clumsily trapped in an adult body.

What Apple needs now more than ever is to feel the same adrenaline it had in its early years. One way to do that would be to return to what it does best — making the world of computing easy for the masses. This is a core competency that Apple stopped nurturing and exploiting.

Steve Jobs has said, "The PC wars are over, and Apple lost." But that was only one battle in a larger war. Every nook and cranny of the Information Age is an opportunity for Apple to apply its distinct ability to make things easier for end users. With millions of us still struggling to program our VCRs, this war may just be getting started.

Frazier is a vice president at The Atlanta Consulting Group, a management consulting firm, and co-author of a new book, *Economic Divide*.

The sorry state of systems management

Patricia B. Seybold

Almost every company I visit these days looks like a disaster waiting to happen.

Distributed systems are so badly managed, it's a wonder business can function at all.

LANs go down with disconcerting frequency. Applications and browsers vie with one another for memory at the desktop and crash with annoying regularity. Database servers stubbornly refuse to replicate with each other. Meanwhile, the company's systems and network management software is straining to detect and correct faults in the firm's LANs, WANs, routers and hubs.

It's really a miracle that our businesses continue to function at all. Most of our distributed systems are badly managed and many are unmanageable. It's apparent that the daunting task of keeping myriad distributed and homegrown client/server applications up and running just hasn't been given a high priority.

Part of the problem rests with our own organizational politics.

No one in the organization is willing to either take control or cede control of departmental applications. Because innovation and customer-responsiveness must flourish close to the customer, central information systems departments feel they can't dictate standards or manage the applications themselves.

Another part of the problem rests with the vendors, who still haven't delivered plug-and-play standards for managing heterogeneous applications.

We moved to client/server applications and distributed systems in the wake of the open systems era. No longer locked into expensive and proprietary systems, we could purchase competitively priced open systems from a variety of vendors and expect them to work together. Where the open systems movement failed us was in achieving meaningful standards for the interoperability of management applications.

What we're left with is a set of systems management platforms that integrate only superficially at the graphical user interface level. Or, we can select a suite of integrated management applications, but only for a limited set of platforms. Neither of these approaches solves the really hard problem of managing heterogeneous distributed applications, particularly applications that were designed and deployed autonomously at the business unit level.

So, we find ourselves on the horns of a dilemma. We want to enable flexibility and rapid response at the business unit level. We also want a well-managed, reliable set of distributed applications.

The only reasonable solution, at this stage in the industry, is to standardize on a smaller set of variable elements: operating systems, database servers, networking software, desktop application suites and even PCs and laptops. What disturbs me about this solution to the manageability problem is that it seems, once again, to be leading us into Microsoft's voracious maw.

I would prefer to be able to tell customers that it's possible to develop applications on a variety of competitive, state-of-the-art platforms. I'd like to say that user companies can rest assured that these applications will be easy to maintain and can be managed cost-effectively across the enterprise. I'd like to say there is a well-defined set of systems and network management standards. Unfortunately, I can't.

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is pseybold@psgroup.com.

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IBM yields on package plan for System/390, 43

Getting it all together

IBM freshens PC, PC server lines with network-centric systems, features

By Jaikumar Vijayan

IBM PC Co. is tying its commercial PC and PC server lines to the enterprise network and the Internet.

IBM recently added "network-centric" models to its PC 700 family, the firm's high-end commercial PC line. The models have new collaboration and systems management capabilities (see chart).

Prominent among IBM's moves was its boost of NetFinity, its PC server-systems management software. NetFinity, now known as PC SystemView 4.0, will ship in April and will let network administrators use an Internet connection and a World Wide Web browser to manage LAN-connected PCs [CW, Feb. 26].

Good move

Analysts said IBM's announcement reflects the industry trend toward bundling more asset management and network management capabilities and Internet hooks into PCs and PC servers.

"The announcements are certainly a step in the right direction for IBM," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass. "Some of the new capabilities they are announcing ease the job of network administrators significantly."

For instance, the latest additions to IBM's PC 700 lineup feature Wake-On LAN technology, which lets network managers "power on" and access switched-off, LAN-connected PCs from anywhere on the LAN.

Wake-On-LAN allows remote system updates during off-hours without requiring end users to leave their systems turned on, IBM officials said.

"I can see us using that kind of feature to distribute software over the network" even when the PCs are switched off, said Eric Libow, a network administrator at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla.

IBM also is bundling Intel Corp.'s ProShare software with all models of the PC 700. The software lets users collaborate and share applications with other LAN-connected users.

The recent additions to the PC 700 family also feature models with advanced telephony software and digital signal processing capabilities. This means users can share voice and data on the same telephone line, which is key for collaborative computing.

Users received IBM's decision to extend remote management capabilities to the Internet with mixed feelings.

"I find it very useful but very dangerous. If I can use the Internet to access and manage a [remote] workstation, I must be getting through a firewall, which is a security hole right there," said Lloyd Blauen, a LAN administrator at US Air in Arlington, Va.

"As it is, I could use the feature within an intranet. But I would have to wait for it to be more secure" before attempting to manage networked PCs via the Internet, he said.

Libow called the feature premature. "I haven't figured out a way to implement it yet, but it would be interesting to go over the network and get to a PC that belongs to us, which I couldn't get to otherwise."

IBM is adding more network-centric features to its PC 700 family...

- **Wake-On LAN**, allows network managers to "power on" unattended systems anywhere on a LAN.
- **ProShare collaborative communications software**, enables information sharing and collaboration over the LAN.
- **Infrared**, for wireless communication with other infrared-enabled devices such as notebook computers and printers.

...and it is tying its servers closer to the Web by:

- **Updating PC System View 4.0**, allows LAN administrators to manage LAN-connected PCs over the Internet.
- **Customizing Web servers**, for OS/2, Windows NT and Solaris.

Briefs

Death of a disk

IBM closed the door on an era of mainframe disk storage by announcing that its once-dominant 3390 subsystems will no longer be marketed beginning April 26. The 3390s used 10.8-in. disk drives, gargantuan by today's standards. But they remained IBM's flagship mainframe disk product until mid-1994, when the company introduced its Ramac RAID device.

Chief executive wanted

The U.S.-based subsidiary of German computer giant Siemens Nixdorf Informationssysteme AG is seeking a chief executive. Richard Lussier, the former head of Pyramid Technology Corp., who became chief executive of Siemens' business in the Americas after the company bought Pyramid last year, will retire in April.

Pentium Pro systems hit the reseller channel

AST Research, Inc. in Irvine, Calif., has started mass-volume shipment of Pentium Pro-based Windows NT desktops to value-added resellers and distributors. Street prices for AST's minitower Bravo MS-T 6150 start at $4,300 for a system based on a 150-MHz Pentium Pro with 16M bytes of RAM and a 1.6G-byte hard disk.

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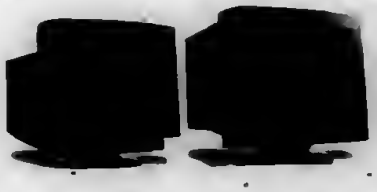

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COMPUTERWORLD
Everything you need to know

New Products

Storage Dimensions has introduced DLT4700 Library, a family of digital linear tape drives.

DLT4700 Library is a seven-cartridge library system that features DLT400 digital linear tape drives.

According to the Milpitas, Calif., company, DLT4700 Library automates high-capacity backup within shrinking backup windows and allows low-cost, on-line archival of infrequently accessed files. It has up to 280G bytes of unattended storage and a transfer rate of 3M byte/sec.

DLT4700 Library was designed to handle the capacity and speed requirements of large Novell, Inc. NetWare servers and midrange Unix and Microsoft Corp. Windows NT servers.

It incorporates an elevator mechanism that provides random or sequential cartridge access.

Pricing for DLT4700 Library starts at $14,500.

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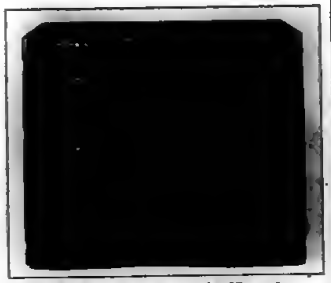

AIWA America *has released RAIDstack*

AIWA America, Inc. has unveiled RAIDstack, a line of fault-tolerant RAID disk arrays.

The RAIDstack series has two high-power SCSI fast and wide interfaces and employs a scalable, low-cost, modular design for easy expansion.

According to the Mahwah, N.J., company, the array series has a base unit with two power supply modules and two drive modules. The base unit has enough power to support up to eight drives.

Users can expand capacity by stacking additional drive expansion units.

Pricing starts at $10,367 for a 3G-byte, base-configuration model with four 1G-byte drives.

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Addonics Technologies Corp. has introduced a six-speed CD-ROM drive, PCD6X.

According to the Fremont, Calif., company, PCD6X connects to a PC through an enhanced parallel port that allows data transfer rates up to 900K bit/sec. It features complete printer pass-through and can print when the CD-ROM and sound systems are in use.

PCD6X comes with cabling and software to support DOS, Microsoft Corp.'s Windows 3.1 and Windows 95 and IBM's OS/2. Pricing starts at $449.

▶ *Addonics Technologies*
(510) 438-6530

Xerox Corp. has unveiled DocuPrint 4508, a personal laser printer.

According to the Stamford, Conn., company, DocuPrint 4508 is a direct-connect laser printer with a 500-sheet capacity. It prints eight pages per minute at 600 dot/in. resolution. It offers multiple fonts on disk and full driver support including DOS, Microsoft Corp.'s Windows 3.1 and Windows 95 and IBM's OS/2.

It includes a status monitor that displays a pop-up notice on the user's PC if the printer's ready status changes.

Pricing starts at $799. More information is available at http://www.xerox.com.

▶ *Xerox*
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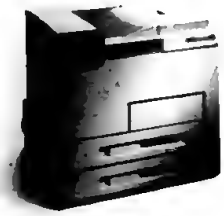

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IBM yields on package plan

System/390 users balked at integrated environment

By Craig Stedman

IBM is backing off a plan to create packaged mainframe database and transaction servers after customers complained that it would require them to change too much of their System/390 environments at one time.

The idea, floated last fall, was to produce complete, ready-to-use servers by integrating the OS/390 operating system with IBM's database and transaction software. IBM hoped this would expand on the simplified ordering, installation and testing strategy that it had started with OS/390, a new package that bundles MVS with several dozen supporting products.

But the thought of installing an operating system, a database and a transaction manager all at once is overwhelming to some System/390 users.

"I don't think we have the stomach to do that," said Michael Puldy, manager of resource management at Barnett Banks, Inc. in Jacksonville, Fla. Database and transaction software such as DB2, CICS and IMS has "a lot broader application impact" than the operating system does, he added.

"Once you start messing with those products, you're messing with the glue that acts as a boundary between the system and the applications," Puldy said. Barnett finished installing the latest version of MVS last November, but it will take into the second half of this year to upgrade DB2, CICS and IMS so that they can take full advantage of the operating system.

IBM has been listening to customers such as Puldy. It still plans to pretest the database and transaction software with OS/390, and customers will be able to request that all the code be put on one installation tape. But DB2, CICS and IMS will remain separate products with development schedules that don't necessarily match OS/390's timetable, which calls for a new release every six months.

"We wanted to make sure that we didn't put so much into OS/390 that it would make it difficult for [mainframe shops] to make changes," said Charles Lickel, vice president of business plans and system architecture at IBM's System/390 Division in Poughkeepsie, N.Y.

Bonus deal

However, IBM is integrating Internet server software with OS/390 as part of a new Internet BonusPak offering. The base release of OS/390 also contains several other software servers providing security, communications and base systems management capabilities.

Israel Gotay, director of technical services at the Student Loan Marketing Association in Herndon, Va., is one customer who wants IBM to put as much as possible into OS/390 so that he can reduce his installation time and costs. "I'm completely sold on it," he said. "If everything's pretested and canned, then it's no big deal to just lay it down and go forward."

But because mainframe users have been schooled in the need to install software one product at a time, it isn't surprising that some are "sort of leery of what's going on," Gotay said. "I think IBM needs to do a better job of communicating how good this is going to be."

Installing DB2, CICS and IMS is especially thorny because customers typically modify the code in those products much more than they tinker with MVS, said Charlie Burns, an analyst at Gartner Group, Inc. in Stamford, Conn. "It takes a lot of testing to make sure the right fixes are in place."

If OS/390 succeeds in easing installation at the operating system level, IBM hopes customers will eventually get comfortable with bigger bites of change, Lickel said. "I really believe in my heart that will be better because it eliminates a lot of complexity. But it will take some time."

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Release 2
Availability September

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- Year 2000 date-field support on all pieces of OS/390
- DFsort data sorting utility added as optional component

Headed for extinction

Despite its icon-like stature, MVS will disappear from IBM's marketing lexicon after OS/390 ships in late March. "MVS is going out of my dictionary," said Joseph Kirschner, manager of System/390 software sales.

Compaq to offer 'net servers as standard platform feature

Vendor move joins trend in software bundling

By Jaikumar Vijayan

Compaq Computer Corp. has joined the slew of PC vendors that offer Internet server functionality as a standard platform feature across their entire server lines.

Compaq will bundle Microsoft Corp.'s Internet Information Server, Netscape Communications Corp.'s Commerce server and Novell, Inc.'s Netware Web Server in every PC server shipment.

Internet access

The Houston PC maker's announcement follows similar ones by IBM PC Co., Hewlett-Packard Co. and Dell Computer Corp. [CW, Feb. 19].

It signals that such software bundles will soon be as common as operating system bundles are now.

These servers are straight PC servers, but with the integrated World Wide Web functions users gain an easy, low-cost entry point to the Internet. They can create and manage Web sites for both internal intranet and external Internet applications.

A standard, fully configured PC-based Web server can start at less than $5,000. More fully featured Internet servers from companies such as Sun Microsystems, Inc. typically start at about $12,000.

"This kind of bundling is going to be great," said Cheryl Currid, president of Currid and Co., a consultancy in Houston. "It's going to reduce user errors in installation and configuration" when getting connected to the Web, she said.

But, "there are a whole lot of other issues in developing a Web site," only some of which have to do with installation and configuration, warned Marshall Fernholz, network control manager at the American Medical Association in Chicago.

Trend here to stay

One of the biggest concerns, according to Fernholz, is maintaining the Web site's security and integrity. In any case, vendors are likely to stick with this bundling trend.

"These days you kind of stick out like a sore thumb if you don't have an Internet server," said James Greene, an analyst at Summit Strategies in Boston. "Certainly, in about six months' time, you are going to have to search high and low for a vendor who does not have an Internet server offering."

Compaq added Netscape's Commerce server to its SmartStart installation CD-ROM. SmartStart is a Compaq integration tool that simplifies the installation and configuration of PC servers from the company.

For an interactive CD-ROM kit that will answer a lot of your questions, call 1-800-527-3753, Ext. 1011.

Call now or contact us at http://www.hp.com/info/1011 and we'll send you an interactive CD-ROM plus additional information about the HP LaserJet 5Si MX. The CD-ROM employs 3-D animation and sound to present an interactive demonstration of the software, features, and other options in this incredible machine. And while you're looking, bear in mind that the HP LaserJet 5Si MX and 5Si are both priced lower than their predecessors. Which leaves just one last question to be answered, "What are you waiting for?"

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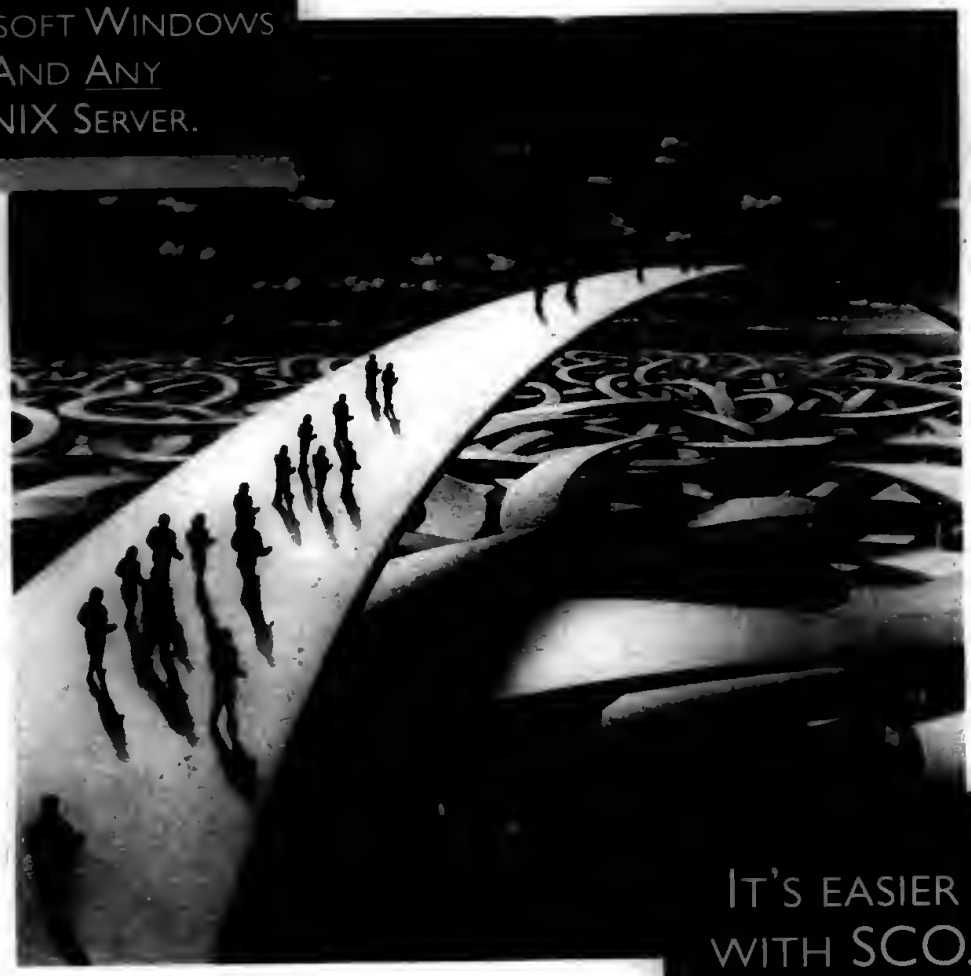

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IBM and Apple deliver OpenDoc, but users want more, 52

Software

Return to sender?

By Tim Ouellette

Vendors are trying to lure customers to their next-generation electronic mail, which is built in to new groupware packages that offer features such as discussion forums.

Some users may not bite, however. They cite company size, limited internal resources and cost as factors.

Others said they are eager to embrace groupware products from Lotus Development Corp., Microsoft Corp. and Novell, Inc. These new packages combine faster client/server messaging with groupware features anch as discussions, group scheduling and business applications.

E-mail upgrades

While pushing the newer packages, the vendors will continue to support their older, file-sharing E-mail products — Lotus CC:Mail, Microsoft Mail and Novell GroupWise. Lotus has already shipped Notes 4.0, which includes Notes Mail. Microsoft plans to ship Exchange this quarter, and Novell said GroupWise XTD will ship by midyear.

"We have interest, yes. But action? Probably not," said John Talbot, systems manager at Pathfinder International, Inc. in Watertown, Mass. The company develops family-planning programs under contract to agencies of numerous governments. Its 170 international employees use CC:Mail for communications.

Pathfinder could benefit from Notes groupware, Talbot said, but creating and maintaining the Notes infrastructure with such a thinly spread workforce would be too difficult and costly.

Users also could be diverted from upgrading to these new wares because of the deluge of new Internet mail standards and products, analysts said. For example, Version 2.0 of Netscape Communications Corp.'s Navigator browser adds basic E-mail and discussion groups.

"We are really keeping our options open," including looking into the Internet, said Frank Manci, document imaging coordinator at Colonial Savings, a mortgage and loan company in Fort Worth, Texas, that uses GroupWise.

JRC International, Inc., a cellular telephone service firm in Fort Worth, wants to dump Microsoft's Mail for either Exchange or Notes because Mail can't handle the Internet messaging format, said Doug Apel, network administrator. "Microsoft Mail just pukes on an Internet message; it can't do anything with it," Apel said.

These users aren't alone. Most businesses will take a second look at their E-mail systems over the next year, said Tim Sloane, a messaging analyst at Aberdeen Group, Inc. in Boston. Smaller firms may opt out of the groupware move because of cost, but others may see groupware as a strategic necessity.

But even users who move to groupware may not remain loyal to their E-mail vendor.

The state of Maine may move its Microsoft Mail users to Notes Mail. And analyst Alan Russel at Clark USA in St. Louis said he wants to move his 700 CC:Mail users to Exchange to take advantage of Clark's Visual Basic programming skills and Exchange's Messaging Application Programming Interface support.

Mail call

The legions of LAN-based E-mail users offer a tempting opportunity for Lotus, Microsoft and Novell to garner upgrade seats to their groupware products

Total seats worldwide LAN E-mail boxes: 47.3M

Source: "Electronic Mail & Messaging Systems" newsletter, Washington

Fast-running Delphi keeps Borland in the race

By Frank Hayes

When Borland International, Inc. rolled out its Delphi application development system a year ago, some analysts doubted Delphi could keep pace with the more established Visual Basic, PowerBuilder and SQLWindows languages. But Delphi's ability to create high-performance applications has forced its rivals to jump on the fast track as well.

Delphi is "a force to be reckoned with now," said Peter Blair, development manager at DHL Worldwide Express in Redwood City, Calif., where Delphi applications will go into production use this year. "The No. 1 driver is the technical benefit you get from it."

Borland has shipped nearly 200,000 copies of Delphi, according to analyst Mark Hanner at Meta Group, Inc. in Burlingame, Calif. That puts it in solid competition with Visual Basic from Microsoft Corp., PowerBuilder from Sybase, Inc.'s Powersoft Corp. subsidiary and SQLWindows from Gupta Corp.

Those visual fourth-generation languages (4GL) are widely used by corporate developers to build two-tier applications in which a client application runs

Delphi, page 52

Fast track

The four leading visual 4GLs are racing to match one another's features

PowerBuilder	First-half 1996	First-half 1996	First-half 1996
Visual Basic	Yes	None	Yes
SQLWindows/ Centura	March	March	Q3 1996
Delphi	March	Yes	Q1 1997

New tools help users manage client/server

By Bob Francis

Systems management tools are cozying up to client/server applications, and the results mean better information systems control over distributed systems.

Recently, systems management vendors Unison Software, Inc., Tivoli Systems, Inc. and BMC Software, Inc. added components to help manage SAP AG's R/3 suite of financial and manufacturing applications. Platinum Technology, Inc. will add R/3 modules this spring.

This kind of integration is sorely needed, said Stephen O'Pry, an IS manager at Montell North America, Inc., a plastics maker in Wilmington, Del.

"When we were in a mainframe environment, the scheduling tools were very strong, but they've been weak so far in the client/server world," he said. Montell is migrating several large applications from mainframes to Hewlett-Packard Co. Unix systems that run R/3.

Until Unison added the link to R/3, Montell had used R/3's built-in job scheduling tools. "But they're nowhere near as strong as what we have on the mainframe," O'Pry said. Unison's Maestro tools "are much closer" to those on the mainframe, he said, an he is using those now.

Unison in Santa Clara, Calif., now allows job scheduling information to be transferred between its Maestro 4.5 and R/3. Links between R/3 and other Unison products, including its storage and output management products, are on the way, according to Tanya Candia, Uni-

Client/server, page 48

New Products

McAfee Associates, Inc. has introduced VirusScan for Solaris, an antivirus scanner for Sun Microsystems, Inc.'s Solaris.

According to the Santa Clara, Calif., company, VirusScan for Solaris prevents Unix servers from harboring or transporting computer viruses that may threaten heterogeneous network environments. It was designed to deliver antivirus security for Solaris-based workstations, World Wide Web servers, file transfer protocol servers and file servers.

VirusScan for Solaris detects and removes more than 6,000 kinds of computer viruses, including polymorphic, stealth, encrypted and macro viruses. It also scans compressed files and supports sequestering of infected files, recursive directory tree scanning and a variety of reporting options.

Pricing for VirusScan for Solaris starts at $200 per server.

▶ *McAfee Associates*
(408) 988-3832

Allen Systems Group, Inc. has introduced ASG-ODE/400, an on-line data entry product.

According to the Naples, Fla., company, ASG-ODE/400 is a data entry tool for customizing screens, edits and applications. It has features for systems control and application development. It eliminates the need for key-to-disk, key-to-tape and key-to-diskette hardware.

ASG-ODE/400 was designed to capture receivables, inventory, billing, catalog orders and other data-intensive tasks. It runs as a native IBM AS/400 application and uses standard AS/400 application technology to avoid release dependency.

Pricing for ASG-ODE/400 starts at $9,000.

▶ *Allen Systems Group*
(941) 435-2200

ConsenSys Software Corp. has introduced ConsenSys Open 4.5, a client/server product that lets manufacturers streamline a product's development life cycle throughout the enterprise.

According to the San Jose, Calif., company, ConsenSys Open 4.5 automates document control and engineers release and product change management throughout a manufacturing organization. Users can configure ConsenSys Open 4.5 to their own terminology, data and workflow requirements.

ConsenSys Open 4.5 has a document and parts management module for tracking, indexing and archiving drawings and documents. Its workflow module manages engineering releases and change processes. Its data integration facility lets users import legacy data and export approved changes to the system.

Pricing for ConsenSys Open 4.5 starts at $1,000 per user.

▶ *ConsenSys Software*
(408) 297-4500

Nico Mak Computing, Inc. has introduced the Wizard interface for WinZip 6.1.

According to the Bristol, Conn., company, the Wizard interface guides novices through the process of unzipping and installing sofware distributed in .zip files. It has built-in Zip and Unzip; PKZip and PKUnzip aren't required.

WinZip 6.1 handles the compression formats often found on the Internet with built-in support for .zip, .tar, .gzip and Unix compress files.

The 32-bit version of WinZip 6.1 requires Microsoft Corp.'s Windows 95 or Windows NT 3.51 or later. The 16-bit version requires Windows 3.1 or Windows for Workgroups.

WinZip 6.1 costs $29. More information is available at http://www.winzip.com.

▶ *Nico Mak Computing*
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Cognos' analysis tool aimed at accommodating the enterprise

By Dan Richman

Size counts.

And Version 5.0 of Cognos Corp.'s PowerPlay, multidimensional analysis tool, announced late last month, will create analyzable data sets from 10 million records — 20 times more than earlier versions handled, Cognos executives said.

The additional capacity is intended to make PowerPlay more useful company-wide by accommodating up to 2,000 users, said Robert Lendvai, marketing manager at the Burlington, Mass., vendor. Earlier versions were geared more for individual use.

"Cognos' server will let MIS build and deploy from a central location, which is key for many users," said Clare Gillan, an analyst at International Data Corp. in Framingham, Mass. "It also means users can get a complete solution from Cognos rather than only a front-end that has to run against some other vendor's OLAP engine."

Capacity grows

Version 5.0's greater capacity is gained via an optional server that runs under IBM's AIX, Sun Microsystems, Inc.'s SPARC Solaris, Hewlett-Packard Co.'s HP-UX or Microsoft Corp.'s Windows NT. Earlier versions ran only as self-contained Windows clients, restricted to 500,000 records because of limited memory, disk storage and computing power, Lendvai said.

With its new server, PowerPlay becomes a more formidable competitor to other client/server on-line analytical processing products such as Essbase from Arbor Software, Inc. in Sunnyvale, Calif.; Express Server from Oracle Corp. in Redwood Shores, Calif.; Lightship Server from Pilot Software, Inc. in Cambridge, Mass.; and DSS Agent from Microstrategy, Inc. in Vienna, Va.

But the PowerPlay client will continue to natively access Essbase, Express and Lightship servers as well as its own. As before, it also can function independently of any server.

One user said he is looking forward to the new version.

"We haven't been topping out on capacity, but when you load a lot of data into the current PowerPlay version, performance slows," said end user John Hagerty, a product manager at Dun & Bradstreet Software in Atlanta. "We think bigger capacity will mean better performance, even with the same amount of data."

The new version also features a Windows 95-style interface, 32-bit architecture for roughly four times the performance in slicing large data sets, linked displays and the ability to display three-dimensional charts. When displays are linked, a pie chart, bar chart and spreadsheet displayed on a single screen all will change simultaneously if any relevant data is changed.

PowerPlay 5.0's Windows client will list for $695. The Windows NT server will cost $4,995, and the Unix server will cost $14,995. All components are set to ship by July 1. PowerPlay runs against relational data stored in databases by Sybase, Inc. Oracle, Informix Corp. or Microsoft SQL Server and against flat files.

Enhanced Linux is beefed-up shareware

By Neal Weinberg

Linux lives.

The Unix variant offered for free in stripped-down form over the Internet is being dressed in suit and tie and sent into the corporate world by Caldera, Inc.

Caldera, founded by former Novell, Inc. CEO Ray Noorda, has begun shipping Caldera Network Desktop 1.0, a $99 operating system designed to function as an Internet server.

Tony Iams, an analyst at D. H. Brown & Associates in Port Chester, N.Y., said Caldera is "starting with a technical core that is maintained by freelancers and various enthusiasts." In fact, the development work on Linux continues on the Internet, with users downloading software, refining it and sending upgraded versions back onto the 'net for anyone to use.

But Caldera has gone one step further, trying to break into the Fortune 500 market with an alternative operating system that is a beefed-up version of shareware. "Probably the most impressive thing about the product is that Caldera has undergone a significant effort to build a viable business solution based on Linux," Iams said.

Caldera Network Desktop is a NetWare client that works with Windows, DOS and flavors of Unix. It is being bundled with WordPerfect and Metro Link, Inc.'s Executive Motif Libraries. There is also a Caldera Internet Office suite that includes electronic mail and spreadsheets.

The Orem, Utah-based Caldera is offering technical support and trying to develop alliances with value-added resellers and independent software vendors.

Product: Caldera Network Desktop 1.0

Features: World Wide Web server operating system that is capable of authoring, navigating and publishing information on the Internet or an intranet. Also, it's a NetWare client.

Availability: Now

Price: $99

The main attraction of Caldera Network Desktop is price, Iams said. The company has leveraged the fact that the kernel development was done for free into prices far below Windows NT at $699, Unix operating systems from SCO, Inc. at $1,295 or Sun Microsystems, Inc.'s Solaris at $1,995.

That's what drew Kerry Schwab, systems administrator at Southwest Airlines in Dallas, to Linux. Schwab said he inherited a project to put a reservation monitoring system on the Windows NT platform.

The project ran out of money, but Schwab was able to revive it by swapping operating systems and then buying preview versions of the Caldera product for $39. Even at the current $99, Linux is a bargain compared with the alternatives, Schwab said.

Dependable, but...

The software has been dependable for its purpose, which is analyzing the performance of the airline's reservation system. But Linux still isn't ready for mission-critical applications, Schwab said. He said he would never dream of running the airline's actual reservation system on it, for example, because it doesn't have industrial-strength fail-safe and backup features.

And while Linux has its rabid fans, especially on college campuses, it still has a long way to go before making a dent in the corporate world. "It's a nice piece of connectivity software," said James Greene, an analyst at Summit Strategies, Inc. in Boston. "It's not clear to me exactly how they're positioning that connectivity."

Iams said Linux has "a fair number of users," but Caldera has its hands full going up against industry powerhouses such as Microsoft Corp. and Sun.

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Client/server

CONTINUED FROM PAGE 45

son's vice president of marketing. The goal is to bring mainframe-like systems management tools to distributed networks, she said.

In addition to R/3, the systems management vendors are working on bridges from their tools to client/server applications from Oracle Corp., PeopleSoft, Inc., Dun & Bradstreet Software and FileNet Corp. For instance, BMC Software, Inc. in Houston is supporting 16 third-party middleware packages, development tools and database applications in its Patrol application management software.

BMC plans to add an Internet application management module to Patrol later this year. This module will allow systems administrators to manage applications distributed over a company's intranet, BMC officials said.

"What we're seeing is just the beginning," said Chris Byrnes, an analyst at Meta Group, Inc. in Reston, Va. "I think all this year we're going to be seeing tighter integration between client/server applications and these management tools," he said.

Users shouldn't expect these new links to solve all their problems right away. Client/server applications still have limited device management, load balancing and backup features, O'Pry said. "Things still have a ways to go," he said.

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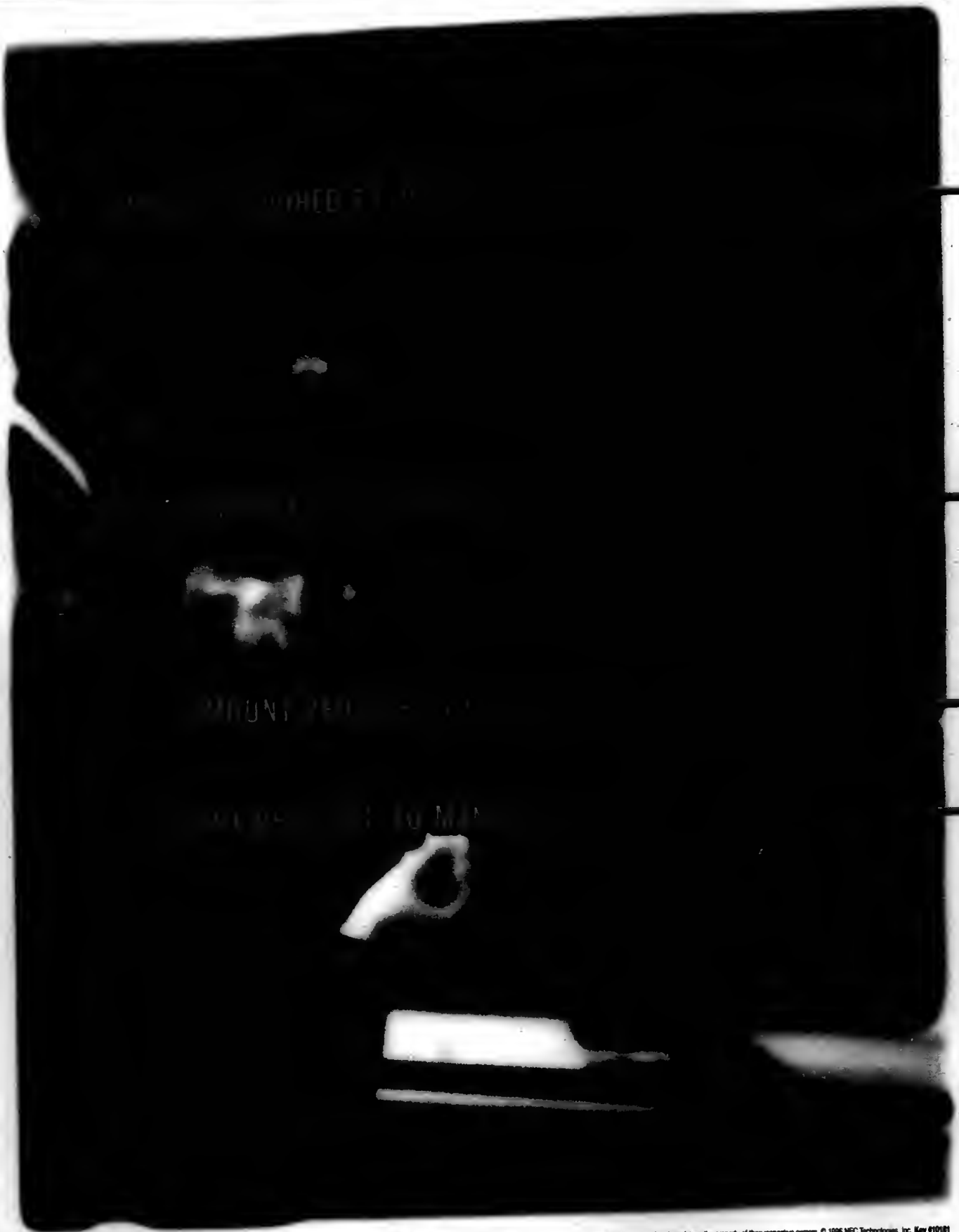

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Delphi

CONTINUED FROM PAGE 45

on a Windows-based PC and communicates with a database server somewhere else on the network.

Current versions of Visual Basic, PowerBuilder and SQLWindows make building those applications relatively easy, with a drag-and-drop approach to creating forms and scripting languages for writing application logic. But applications also run relatively slow because the programs are interpreted — the 4GL engine examines each line of code on the fly and then performs its functions. As a result, 4GL applications perform poorly compared with programs written in compiled languages such as C or C++.

"The speed problem is obvious," said Nicolas Richards, a senior systems consultant at the Platt's division of Standard & Poor's Corp. in New York. "It takes a long time for forms to show up, and when it comes time to extract data out of tables, it's just really slow."

But Delphi, introduced last spring, can compile applications into native code. Its ability to run applications much faster has been key to its appeal, users said. And Powersoft and Gupta have scrambled to add that capability to new versions of their visual development systems. Gupta's new release — Centura — will ship this month. PowerBuilder 5.0 is slated to ship in May or June.

Microsoft wouldn't comment on its plans for a Visual Basic compiler but acknowledged the feature is much requested for Visual Basic 5.0, expected around midyear.

By June, all four of these development environments will support standard components based on Microsoft's OLE architecture. And by early next year, they also will let developers partition applications easily so parts can run on different computers.

Feeling the pressure

Ironically, the ability of visual 4GLs to compile code may pressure Sun Microsystems, Inc. to improve performance of its Java system for developing Internet applications. Java applications are designed to be downloaded from the Internet and then run in interpreted mode. That makes it possible for the same Java programs to run on a wide variety of computers — but it also gives Java slower performance.

That may encourage use of "just-in-time" compilers that will compile Java programs to native code just before they are used. "Running very fast is one of the things Java has to have for an applet to be successful," said Rick Brennan, manager of Web services at National Semiconductor Corp. in Santa Clara, Calif.

New Products

Hahtsoft, Inc. has introduced Hahtsite, an integrated development environment for building and maintaining strategic World Wide Web-based applications and large-scale Web sites.

According to the Raleigh, N.C., company, Hahtsite is a multiplatform product for Web-site application developers. It features a Microsoft Corp. Visual Basic syntax-compatible programming environment with a debugger, site management, page authoring capabilities and an integrated graphics editor. It supports Java applets and includes Open Database Connectivity access and a scalable application engine.

Hahtsite supports Hypertext Markup Language 2.0 and extensions from Netscape Communications Corp. and other vendors. It lets users choose Java applets and multimedia objects from a pull-down menu to integrate them onto a page. It also includes sitewide control, global updating and a scalable application engine.

Pricing for Hahtsite starts at $695.

▶ *Hahtsoft Software*
(919) 821-1280

Ives Development, Inc. has introduced Team Studio, a software development tool for Lotus Development Corp.'s Notes.

According to the Cambridge, Mass., company, Team Studio splits Notes applications into reusable objects or design elements. The elements can then be pieced together to build a native Notes application. Developers can use the product to build working prototypes and additional objects, which can be added to a repository and reused in future projects.

Team Studio was designed for intensive Notes application development that deals with user interface design standards and reusable objects.

Pricing for Team Studio starts at $995 per developer.

▶ *Ives Development*
(617) 576-5747

OpenDoc delivered; users want more

By Frank Hayes

At long last, IBM and Apple Computer, Inc. are starting to deliver their OpenDoc component system for software development. But users say the two companies still aren't offering what is really needed to create easily customized corporate applications.

"In an office environment, you want spreadsheets mixed up with word processors, databases, graphics — the whole schmear," said Peter Jacksoo, a project manager at the U.S. Army Corps of Engineers New England division in Waltham, Mass. Users say they want OpenDoc to give them easy access to all those capabilities in a single custom application, he said.

That's a tall order for OpenDoc, which is an architecture for creating prebuilt software components that can be plugged together to build applications. Although Apple and IBM have been working on the system for years, Apple released its Macintosh OpenDoc software development kit only last November, and IBM said it will ship its OS/2 version in March. IBM also is working oo versions for 32-bit Windows and AIX, IBM's version of Uoix.

Apple said it already has shipped more than 100,000 OpenDoc software kits for the Macintosh.

OpenDoc is similar to Microsoft Corp.'s OLE architecture, which is built in to each version of Windows. OLE provides an architecture for using standard components called OLE controls within applications. It also lets applications share data by combining parts of a word processor document and a spreadsheet, for example.

OLE vs. OpenDoc

Microsoft OLE has a lead over Apple's and IBM's OpenDoc products, which have just begun to get into users' hands

December 1990: OLE 1.0 for Windows
March 1994: OLE 2.0 for Windows
November 1995: OpenDoc for Macintosh
March 1996: OpenDoc for OS/2
Midyear 1996: Network OLE for Windows NT
Q3 1996: OpenDoc for Windows 95 and NT

Stringing things along

But OLE components must be used with a programming environment such as Microsoft's Visual Basic or Borland International, Inc.'s Delphi. OpenDoc adds the ability to string together components using a scripting language. Customized components also can be tailored easily from existing OpenDoc parts.

But IBM and Apple have yet to make a basic set of OpenDoc parts available to users. "We're waiting for those base components — an entry field part, a button part, that sort of thing," said Chuck Reeves, a software engineer at DST Systems, Inc. in Kansas City, Mo., which processes mutual fund transactions for the financial services industry. "Until they come up with those base components as part of a product, OpenDoc's advantage will be somewhat marginalized."

And OpenDoc faces tough competition from Microsoft's well-established OLE. Third-party vendors already are porting OLE to other platforms, erasing OpenDoc's potential cross-platform advantage. And Microsoft has improved the tools for customizing OLE controls in its Visual C++ development package.

OpenDoc users haven't given up hope yet, but they want results soon. "You can't just develop a great idea; you've got to have some mechanism for using it," Reeves said.

Briefs

IBM, JBA cross-license

IBM and JBA International Ltd. in Rolling Meadows, Ill., said they will work together on a new object-oriented rapid application development environment. They will license technology from each other in a deal that will add IBM's C++ compiler technology and class libraries to JBA's Guidelines, a client/server visual development system for the AS/400 and Unix-based computers. The two didn't say when the new version of Guidelines will be available.

Testing tools . . .

Software Research, Inc. in San Francisco began shipping a suite of software testing tools designed for the World Wide Web. The $1,995 STW/Web tool set lets Web developers create testing scripts and simulate hundreds of interacting users in order to test the performance of Web sites under a heavy user load. By June, the company will add another tool for assuring that Java applications are fully tested and raise the price of the suite to $2,995.

. . . and testing tools

Platinum Technology, Inc. in Oakbrook Terrace, Ill., unveiled a suite of tools for testing Internet applications and Web sites. The Final Exam Internet Test Suite includes tools for repeatedly testing Web pages and analyzing Web server performance under high user load levels. A demonstration version of the suite will be available for downloading in March from Platinum's Web site (http://www.platinum.com). Full versions of the tool suite, which will run under Windows, Windows NT and Unix, will cost $2,995 and be available in the second quarter.

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THE NETWORK IS THE COMPUTER

WAN switch will make phone companies remote access outsourcers, 58

The Enterprise Network

Remote router wish list

By Bob Wallace

Vendors have been shipping remote-office routers for a few years, but users are still waiting for them to get it right.

"We've seen so overwhelming number of remote-office routers hit the market, but they've had substantial shortcomings," said Jim Fay, director of strategic technologies at PMI Mortgage Insurance Co. in San Francisco. "We've run into buggy software and boxes that are too jam-packed with features that we don't really need."

What users want

- More wide-area network flexibility.

Fay's plight is common to network managers looking for flexible, affordable ways to link multiple remote sites to their corporate networks. Like Fay, other users are looking for more WAN options.

For a long time, private lines and asynchronous dial-up links were the best WAN links most remote office routers could support. And some boxes still don't support frame relay and Integrated Services Digital Network (ISDN).

- Frame relay.

Frame relay is 5 years old, but it took router makers some time to accept it. Now, part of their market is lost to frame-relay access devices. This once-small market is now mainstream, with recent product announcements from Cisco Systems, Inc., IBM and Motorola, Inc.

These devices typically support one or two main protocols and provide all that is needed to tie devices to frame-relay WAN links. They can thus eliminate the need for routers.

Still, some users would like more routers that support frame relay.

"We definitely want to see high-end and low-end routers support frame relay," said Paul Watson, director of network systems at Commercial Union Insurance Cos. in Foxboro, Mass. The firm is looking to move from a T1 backbone network to a nationwide frame-relay network.

- Expandable routers.

In addition to more WAN ports to accommodate ISDN and frame relay, users also want remote-office routers with more LAN ports.

"Today's remote-office router [may need to] become tomorrow's midsize office router," said James Wiedel, director of networking at the University of Southern California in Los Angeles. "But fixed-configuration routers are not expandable and have to be replaced when LANs are added at the remote sites."

- Lower prices.

Wiedel and other users say they think remote-office routers are far too expensive in general. "I think we're paying for vendors' [research and development] programs and people's boats," Wiedel said.

And one thing users don't want: pushy vendor salespeople pressuring them to buy expensive service and support plans. A $3,000 router can come with a $1,500 maintenance package, for instance, users said.

"If these boxes are as reliable and easy to keep going as the vendors say, why do I need a maintenance plan?" Fay asked.

What users want in remote-office routers

- WAN items
- Low-priced units
- Easier IBM SNA connectivity
- Features offered in add-on modules
- Frame-relay support
- Easier device configuration
- ISDN support
- More reliable products that don't require maintenance programs

Briefs

Wireless messaging offered

PageMart, Inc. in Dallas, a wireless messaging provider, announced what it said was the first 32-bit wireless messaging software developer's kit offered by a nationwide carrier. The nonproprietary kit gives developers the ability to embed wireless messaging into applications based on any 32-bit operating system, such as Windows 95 and Windows NT.

Bell Atlantic expands long-distance cellular service

Bell Atlantic Nynex Mobile in Bedminster, N.J., announced it will expand long-distance cellular service to its local customers beginning this month. The company said it would offer "flexible calling plans" with local, regional and national ingredients to its customers throughout the East Coast, as well as in parts of Arizona, New Mexico and Texas.

SAP monitor announced

Hewlett-Packard Co. and SAP AG announced the integration of R/3 business-transaction performance data with HP's PerfView and MeasureWare tools. The integration will enable central management of the database, operating system and network resources.

Network management vendors add tools to support enterprise

By Bob Francis

It's not your father's Novell network anymore.

In fact, the network may not even include Novell, Inc.'s networking software.

Heeding the changes taking place on corporate LANs, network management vendors are shipping new releases that handle Windows-oriented desktop and network environments from Windows 3.1 to Windows NT.

LAN management

This month, McAfee Associates, Inc. and Symantec Corp. will give their management tools support for everything from Windows 95 to tape backup over the Internet.

"These systems aren't competitive with high-level systems management solutions at present, but they're moving closer together," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

One user said support for a variety of operating systems is critical.

"We have a group of users running Windows 95, and we need the same tools for our users running 3.1. [Windows 95 users] were frozen out until these tools began coming out," said Deborah Reid, manager of technical and advanced systems at Kramer, Levin, Naftalis, Nessen, Kamin & Franken, a New York law firm. The firm uses McAfee's SaberTools to manage file installation via the LAN.

Santa Clara, Calif.-based McAfee will support Desktop Manager, the Windows 95 interface, with SaberTools 6.0. Company officials said they believe Desktop Manager will be the interface of choice for Windows NT-based networks. The new release also adds a WinCompare feature, which lets administrators load files locally to networked systems.

Symantec, in Cupertino, Calif., will give Norton Network support for Windows 95 and the Desktop Management Task Force's Desktop Management Interface (DMI). DMI provides information on the status and configuration of devices on a network.

Products from these LAN network management vendors don't include support for Unix operating systems except through Simple Network Managment Protocol, but future products may include some features. "It's an area we have to look at," said Bill Larson, president of McAfee. "We're already seeing some of our sites that need to manage their Unix systems along with their LAN installations."

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Cascade switches on outsourcing options

By Bob Wallace

Users may soon be able to outsource their remote access operations to telephone companies — and save money in the bargain — through a new wide-area network switch package from Cascade Communications Corp.

Remote access

The switch vendor's HyperPath hardware/software package, available now, enables telephone companies to provide remote access services from switches in their networks. That will eliminate the need for users to have remote access servers at central sites.

But while many telephone companies may begin offering these services in as little as three months, the Cascade switch supports only those remote users with Integrated Services Digital Network (ISDN) lines.

That restrictioo has some users worried.

"Outsourcing remote access is a super idea that can save users time and money, but how do you support people that can't get ISDN or are mobile and use dial-up links?" asked Bill Horst, chief at the General Services Administration's communications branch in Philadelphia. "Having to keep modems to support non-ISDN users defeats the purpose of what Cascade's doing."

Analysts agreed.

"The lack of analog dial-up support constitutes a major shortcoming," said Lisa Henderson, an analyst at TeleChoice, Inc. in Verona, N.J. "That means telephone companies that want to support [analog dial-up links] are going to need a separate box to support them."

Furthermore, analysts say the regional Bell operating companies have done a poor job of deploying, marketing and installing ISDN lines.

And the specter of proposed rate hikes by Pacific Bell and US West Communications, Inc. doesn't bode well for the star-crossed service.

To make matters worse, many of the remote access servers that Cascade's package was designed to replace support both ISDN and analog dial-up links. The vendor said it has no near-term plans to support these linka and said only that ISDN is its top priority.

Despite the shortcomings of ISDN, Cascade is breaking new ground with HyperPath, analysts said. No other WAN switch vendors support remote access in addition to frame-relay and Asynchronous Transfer Mode switching in a single box.

"By supporting remote access from switches that the carriers already have in their networks, Cascade is making the rollout of remote access services extremely easy and affordable for telephone companies," Henderson said. "All they have to do is add some boards and software to their Cascade switches."

Cascade hopes the carriers that use its switches will buy the HyperPath add-on package and that those carriers that don't yet use its switches will be attracted to the switch/HyperPath offering (see chart).

The WAN switch maker said a fully loaded version of its switch — configured to support normal frame-relay switching and network management, in addition to remote access — could provide remote access at a one-time cost to the telephone company of $410 per remote site.

HyperPath also enables Cascade switches in carriers' networks to support numerous ISDN Primary Rate Interfaces.

Remote access outsourcing providers

- Ameritech
- Bell Atlantic
- US West
- Pacific Bell
- Four others Cascade wouldn't mention
- AT&T
- LDDS/WorldCom
- UUNet
- NetCom
- PSINet

Source: Cascade Communications Corp., Westford, Mass.

Incite tweaks videoconferencing

By Suruchi Mohan

A new videoconferencing application gives users video- and audioconferencing capabilities in the same box.

Incite in Dallas has introduced Conversational Media, a videoconferencing system that users can iotegrate with a private branch exchange (PBX). So instead of using their PCs for the video and audio portions of a videoconferencing call, users can let their PCs control their telephone. Users who don't have videoconferencing can tie in to the conversatioo, which isn't possible with conventional videoconferencing. As a result, a videoconferencing call can be forwarded and transferred as if it were a voice call. The audio portion can be recorded as voice mail.

The simple idea requires a somewhat complex implementation. The Conversational Media system requires a compression/decompression device in the form of an add-on card, an isochronous Ethernet — or IsoEnet — network and an Integrated Services Digital Network Primary Rate Interface (ISDN PRI) connection.

All that translates into high cost, particularly since IsoEnet isn't widely installed. Incite estimates it will now cost users about $2,800 per seat to npgrade to the new system. The company says reduced component costs will cause prices to fall to $1,400 per seat by year's end.

"This is not a lot of money for what they do," said John Puttre, president of John Puttre & Associatea in Pleasantville, N.Y. "The option is to wait for [Asynchronoua Transfer Mode]."

But the need for IsoEnet and ISDN PRI may limit the use of this technology.

"One limitation of IsoEnet is [that] it exists only in corporations or on campuses," said Ron Brey, an associate vice president at Austin Community College in Texas. The college has been testing and demonstrating the product for about four months as a tool for "distance learning." But students woold need to install an ISDN line at home to use it, Brey said. "It will be a long time before we can take the technology to the home," he said.

But Sridhar Krishnaswamy, a senior architect in the Intelligent Services Platform Group at MCI Communications Corp. in Cedar Rapids, Iowa, said buying a PRI connection requires only a quick call to a long-distance carrier. Basic Rate Interface (BRI) ISDN is harder to get, he explained, because many of the regional Bell operating companies aren't equipped to iostall it.

Incite's approach is different from that taken by other vendors. Typically, users need a network interface card and an ISDN BRI card, which is connected to the PBX, said Richard Platt, director of development at Incite.

Now, users need only one card to make the video and audio connections. IsoEnet also gives users 6M bit/sec. of bandwidth on top of the 10M bit/sec. they get from regular Ethernet.

Incite *is able to provide broadcast-quality images using the H.320 standard*

New Products

PowerCerv Corp. has introduced Xceed, a sales force automation system.

According to the Tampa, Fla., company, Xceed is a customizable Windows-based system that stores information regarding organizations, contacts, events, deals and quotes.

Xceed was designed to improve presales customer service and capture customer information for sales and marketing trend analyses. It supports various marketing events and a range of selling processes, including business-to-business and team selling and team buying.

Xceed supports Windows 3.x, Windows NT, Windows 95 and most popular ANSI-standard SQL-based relational database management systems. Pricing starts at $1,750 per user.

▶ *PowerCerv*
(813) 226-2378

CACI International, Inc. has announced Comnet III 1.2, network simulation software.

According to the Arlington, Va., company, Comnet III 1.2 is a simulation tool that integrates LAN, WAN and metropolitan-area network performance prediction in an object-oriented environment. It focuses on TCP/IP and modeling TCP/IP over Asynchronous Transfer Mode (ATM) and frame-relay networks. It has modules that let users hring in actual network operational data for analysis.

Comnet III 1.2 lets planners make changes, try alternatives and derive performance measures on the network before purchasing additional hardware and software. Expanded modeling features include switched LAN modeling for ATM, Ethernet, Token Ring, Fiber Distributed Data Interface and 100Base-T.

Flexible buffer policies provide additional modeling functions including early packet discard and partial packet discard for ATM, buffer sorting optiona by priority and virtual cut-through nodes.

Comnet III 1.2 runs on PCs and Unix workstations. Pricing starts at $39,500 for a single user.

▶ *CACI International*
(703) 841-7800

Product short

Executive Software International, Inc. has released Diskeeper 1.01 for Windows NT. It was designed to defeat the effects of fragmentation on machines based on Digital Equipment Corp.'s Alpha chip. Cost: $125 for Windows NT Workstation and $399 for Windows NT Server. Executive Software International, Glendale, Calif. (818) 547-2050.

The IBM PC

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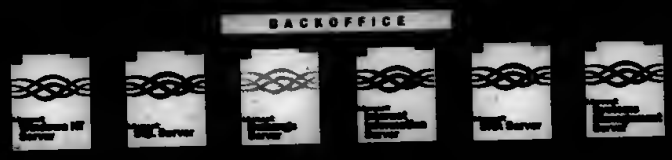

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Analysts urge users to take a comprehensive view of system security, 65

The Internet

Custom software helps Web users follow 'hit' parade

By Mitch Wagner

Imagine you own a store with a big, beautiful window display, but you can never tell how many people look at it.

Indeed, you can't tell if it's being noticed at all.

You know a lot of people walk down the street, and many of them walk past your storefront; you figure some of them must be glancing at your window.

That's the situation faced by most of the 100,000 commercial domains registered on the Internet. The Internet's World Wide Web component was designed as an academic tool, not a business tool. As a result, there is no built-in way to count the visits to a site.

The hit count

But custom software has picked up the slack from basic Internet technology. As a result, commercial users have been able to find a variety of ways to measure traffic, including how many people visit a site, what they view and how long they stay at the site.

Most of the commercial sites on the 'net use homegrown software and public-domain applications for measurement. Some use commercial products.

Arguably, the users who are most concerned about Internet usage are those who sell advertising on their Web sites. People who sell ads in print publications and on TV need to be able to guarantee how many people are likely to see the ads; the same goes for on-line advertising.

That's where I/Pro, Inc. has found its niche. The San Francisco-based company runs a service that tracks the number of visits a Web site receives.

I/Pro runs agent software on a site operator's host server, which sends information back to I/Pro's own servers. I/Pro processes reports from the information, which the site operator then gives to advertisers.

"Our advertisers like that because it's coming from a third party," said Susan Feigenbaum, a research manager at Playboy Enterprises, Inc. in New York.

Site operators also use monitoring software to track which parts of their sites are most popular. This information can help them allocate resources to maximize the site's appeal.

"We're interested, internally, in finding out which of our products get the most hits," said Larry Kniebel, senior programming analyst at Gale Research, Inc. in Detroit. Gale sells professional directories, including the *Encyclopedia of Associations*, on-line and in print. The company also sells guides to on-line and Internet databases.

"That would tell us which products are most in demand, to help our marketing department in that area," Kniebel said. Gale uses public-domain tools to track usage of its site.

Watching the traffic go by

Web site operators don't look at just what parts of the Web site get the most hits. They also look at the site's overall traffic.

"If you see a steady upward curve and then it starts to level off, it might be time to put on another server," said Sam Gassel, manager of Internet development at Turner Broadcasting System, Inc. in Atlanta. It runs a Web site for the Cable News Network (CNN).

If usage levels off, it could mean that traffic has bogged down the server and users are getting tired of waiting for files to download, Gassel said. Turner Broadcasting uses a mix of homemade tools and commercial products and services to monitor traffic.

Internet site operators also say they like to track how visitors arrive at their sites. It is customary on the Web to link sites, and site operators say they like to keep tabs on which links are most effective.

"If we find out that we're consistently getting visitors from another specific site, we might go in and buy a link to [make] sure we always have that link and that it's prominent," said Marty Rood, president of Dealer Internet Services Corp. in Lynwood, Wash. The company runs DealerNet, an on-line directory of car dealerships. If a lot of users are visiting CNN from a specific service provider, Gassel said, Turner Broadcasting might make a deal with that provider for a direct connection to guarantee fast access.

Most companies measure their Web sites with software they have written themselves or public-domain software. Some have considered using commercial products, but so far haven't found compelling reasons to switch.

"We haven't found a product that does all the things we want to do," said Randy Adams, president of the Internet Shopping Network, Inc. in Palo Alto, Calif.

Closer Look: Web usage tracking tools

Counting coup

Vendor	Product	Price
Group Cortex http://www.cortex.net	SiteTrack	$3,495
Net.Genesis http://www.netgen.com	Net.Analysis	$2,295
Intersé http://www.interse.com	Market Focus	$695
E.G. Software http://www.egsoftware.com	WebTrends	$299
Open Market http://www.openmarket.com	Secure WebServer WebServer	$4,995 $1,495
Netscape Communications http://home.netscape.com	Commerce Server Communications Server	Starts at $1,295 Starts at $495

Getstats
http://www.eit.com/software/getstats/getstats.html#distribution
Created by Enterprise Information Technologies, Menlo Park, Calif.

Wusage
http://www.boutell.com/wusage/#whatis
Author: Thomas Boutell

I/Pro
http://www.ipro.com/
Monitors traffic by using a software server that resides at the I/Pro site in San Francisco

Measure for measure

The first measurement of Web usage was "hits." The same people who boast that their sites receive thousands or even millions of hits per day are also the first to admit that the measurement is useless. The reason: one "hit" equals one request for a file. But it may not even mean a single visit.

"A lot of times, we'll have a page with some text and six graphics on it. That's one page, but it counts as seven hits," said Susan Feigenbaum, a research manager at Playboy Enterprises in New York.

A new standard, called page views, recently emerged. It measures hits to all the files that combine to create a single page. Playboy, for example, sees 1.2 million page views per day; that translates to 3 million to 4 million hits under the old measurement.

But even the number of page views isn't what Web operators really want to know. They want to know who visited a site, how many visits the site had, where the visitors came from and what they spent the most time on.

Web server packages will track visitors' domains. For instance, if your address is *fred@acme.com* and you visit a site, the software on that site will note that a user is requesting files from *acme.com*.

Tracking software counts the consecutive hits that come in rapid succession from a domain. When there is a long break between consecutive hits and then a series of new hits, the software counts that as two visits. — *Mitch Wagner*

Experts: Encryption flaws no secret

By Gary H. Anthes

Recent breaches of encryption security may have left users feeling queasy, but users are by no means defenseless, experts say.

After students at Purdue University found a flaw in the widely used Kerberos security system, experts urged users to take a holistic approach to information security.

"System security is more than software," said Eugene Spafford, a computer science professor at Purdue. "It's hardware, it's personnel, it's management." Two of Spafford's students found the Kerberos defect, which could allow someone to easily guess encryption keys.

Purdue's Eugene Spafford: *'System security is more than software. It's hardware, it's personnel, it's management.'*

Spafford said users must thoroughly analyze the risks they face and the possible damage that can result. "If you have nothing valuable on your systems and no connections to the outside network, you are probably pretty safe," he said. "But if you have millions of dollars to lose, and you're hooked up to the Internet with no firewall and no written policy, then you may be criminally negligent."

Users need to take a comprehensive approach to security — one that transcends cryptography — because it isn't easy for users to assess the soundness of their encryption systems.

"Cryptography and secure protocols tend to get pretty esoteric," said Jne Kovara, director of engineering at CyberSafe Corp. in Issaquah, Wash. "It's not intuitively obvious to the casual observer when you have a problem."

Kerberos is based on a sound design, Kovara said. "The protocols have been checked 40 ways to Sunday, but programmers make mistakes," he said.

Users should be wary of those implementation errors and errors in management and design, said Stephen T. Kent, chief scientist of security technology at BBN Corp. in Cambridge, Mass.

For example, the Data Encryption Standard (DES) algorithm has proved through 19 years of use to be based on a very sound design, Kent said. "But you can implement DES and make a lot of implementation errors," he warned.

Cryptography expert Dorothy Denning, a computer science professor at Georgetown University in Washington, said it is likely that there are flaws in all cryptographic systems. "It's very hard to get everything perfect," she noted. "Don't expect 100% security from any of this stuff."

Albert R. Belisle, former chairman of the Information Systems Security Committee at the American Bankers Association, cautioned bankers not to get hysterical about reported flaws in security products such as Kerberos. "Using these things is better than doing nothing," he said. "Keep it in perspective; you know they [will] fix it."

Clipper's hidden engine: Skipjack

Most of the uproar that surrounds the government's proposed "Clipper chip" encryption method stems from its use of a "key escrow" feature that would let the government obtain users' encryption keys for court-approved wiretaps.

Many users also object to Clipper chip because it uses a secret — and possibly unproven — algorithm called Skipjack. The government won't reveal the algorithm because it fears Skipjack could be sabotaged.

The National Security Agency (NSA) recently commissioned a blue-ribbon panel of cryptographers to study the algorithm. The panel gave it high marks.

Panel member Dorothy Denning said she tested Skipjack while it was under assault from the NSA's extensive library of automated attacks. But the soundness of an entire crypto system can't be proved conclusively, she said. "You can prove isolated properties, but it's very hard to model the full system," she said.

Despite the favorable reviews, many users won't trust software they can't see. "Good crypto and security systems should have their source code available for examination," said Jeffrey Schiller, a network manager at MIT and a developer of Kerberos. — *Gary H. Anthes*

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Windows NT Web server pro

Vendor	Product	Price
Frontier Technologies http://www.frontiertech.com	SuperWeb	$795
The Internet Factory http://www.artisoft.com/tif/	Commerce Builder	$995
Netscape http://www.netscape.com	Commerce Server Communications Server	$1,295 $495
O'Reilly http://www.ora.com	WebSite	$499
Process Software http://www.process.com	Purveyor	$495

Microsoft Web server prompts yeas, nays

By Kim S. Nash

It's not yet a month old, but Microsoft Corp.'s World Wide Web server has struck both a chord and a nerve with users.

On one hand, the Internet Information Server (IIS) is the antidote to technical problems some users have had with Netscape Communications Corp.'s Windows NT Web server [CW, Feb. 26]. But Microsoft's IIS, which is bundled for free with the Windows NT operating system, isn't perfect either, according to several early users.

Some users said they are bothered by the lack of Web-specific security features in IIS and the product's scanty documentation.

Sparse documentation disappointed Chuck O'Keeffe, the owner of The Talent Network, a Web site that links actors and models with casting directors. "The server is free, but you have to spend a bundle on support, [more] development tools and the like in order to make it work," O'Keeffe said.

In fact, several users said that although they liked the fact that IIS is bundled with NT, dollars spent on extras required to put the product in practice can quickly add up.

For example, membership in Microsoft's Developers Network — the primary avenue for details about the ins and outs of using IIS — costs at least several hundred dollars per year, depending on the scope of the pact between the developer and Microsoft.

Membership is a must for people who want to put IIS into production, said Michael Rice, a software engineer at Science Applications International Corp. in McLean, Va. "You're going to need the bonus documentation and sample code" available through the network to build fruitful IIS applications, he said.

Security blanket

Security is also a concern for some users. While IIS uses the security capabilities of the NT operating system, the server doesn't support Internet security protocols such as Secure Hypertext Transport Protocol (SHTTP). That won't happen until late this year, when Microsoft plans to ship a secure version of IIS, code-named Catapult. Until Catapult comes out, Netscape's Commerce Server has better capabilities for building secure Web servers, said John Parkinson, director of emerging technologies research at Ernst & Young in Los Calinas, Texas.

But some users said they like the way Microsoft ties IIS security to Windows NT security.

Charles Williford, an information systems specialist at Owens Corning Corp. in Toledo, Ohio, said he likes the central control.

Rather than have each individual intranet at Owens Corning use a different method to protect corporate data and keep intruders out, IIS lets IS managers configure security from a central NT server, Williford said.

"Otherwise you [have] huge gaps in your [overall] security because each department has a Web server, but no one knows what the other is doing," he explained.

Server options

When good Web robots go bad: Snafus wreak havoc on search engines

By Gary H. Anthes

Your helpful software agent no doubt resembles the friendly robot R2D2. Unfortunately, some World Wide Web robots act more like Darth Vader.

One such robot popped up last week. IBM's Emergency Response Service sent an alert over the Internet warning of Common Gateway Interface (CGI) flaws in two widely used versions of Web server software. CGI programs perform tasks such as sending mail or accessing databases on behalf of users.

The IBM alert concerned a vulnerability that would allow an attacker to trick a CGI program into executing commands on the server host with the same privileges as the person who runs the server.

"The risk is significant because a person can get unauthenticated control of a system running a Web server," said Steve Branigan, a senior system engineer at Bellcore.

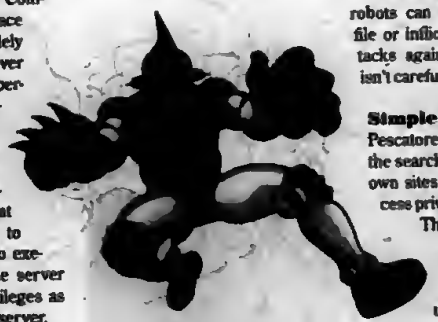
Branigan advised users to set up Web servers on machines that contain no sensitive information and have no connections to systems on the corporate network.

Methods of corruption

There are other ways to turn good robots to bad. A contributor to the Best of Security Internet mailing list recently reported that a popular Web search engine, if asked to look for keywords such as "unpublished," "proprietary source code" or "copyright notice," would retrieve documents not intended for wide distribution.

Another contributor, from a university in Berlin, reported that the university's server was brought to its knees when it became swamped with millions of requests for a certain student's home page.

It turned out that Web robots trained to look for smut were attracted by the racy language the student had included on his home page.



Web robots

Web robots are software agents dispatched by Web browsers or other client software to retrieve information or perform other tasks on World Wide Web servers. Most perform benign functions, but even the friendly ones can inflict damage accidentally.

That is a denial-of-service attack, said John Pescatore, research director for information security at IDC Government in Falls Church, Va. "If your information gets indexed by [a search engine such as] Yahoo, and 5 million people pound on you, then your legitimate customers can't get to you," he said.

Owners of Web servers who don't want search engines to index the contents of their sites can use the Robot Exclusion Protocol to block indexing. It won't block malicious actions, however.

And deliberately malicious Web robots can steal your password file or inflict denial-of-service attacks against your server if it isn't carefully configured.

Simple test

Pescatore advised users to run the search engines against their own sites to see if they can access private data.

The HyperText Transport Protocol (HTTP), on which the Web is based, uses simple commands such as "Get" and "Delete."

"If a Get command points to a password file, the HTTP server will blindly return the password file to the requester," Pescatore said. "Similarly, the Delete command could point to the location of auditing software or a firewall start-up file."

That kind of mischief can be blocked by setting system parameters, or "permissions," carefully.

"The main problem is people are configuring these [servers] badly and are leaving themselves wide open," said Richard Ford, research director at the National Computer Security Association in Carlisle, Pa. "They are offering these brand-new services and are not thinking about permissions," he said.

Keys to security

"Keep it simple, trail the bleeding edge and don't buy Version 1.0 of anything" is Bob Bagwill's advice for buying Internet software. Bagwill runs the Computer Security Resource Clearinghouse Web server at the National Institute of Standards and Technology in Gaithersburg, Md.

Bagwill also said users should consider transferring security headaches to others by outsourcing their Web operations. He said many organizations would find that more cost-effective.

Bagwill offered the following advice about the care and feeding of a Web server:

- Have a clear information security policy, updated to include Web use.
- Have central coordination or control of Web use.
- Protect the Web server behind a firewall.
- Use security tools to check system configurations, detect intrusions and control and log network connections.
- Dedicate a computer to Web service and eliminate all nonessential protocols, users, administrators and software.

— *Gary H. Anthes*

DEC to extend Alta Vista's reach

By Michael Goldberg

Is Digital Equipment Corp.'s Alta Vista search engine sexy?

By one measure it is: Since its debut in December on the World Wide Web, it has become as popular as *Playboy*'s home page, recording up to 4 million hits per day (www.altavista.digital.com).

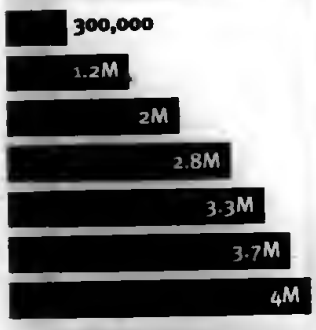
Alta Vista is a running promotion for Digital's search and indexing software and its Alpha hardware, but Digital officials said users soon will be able to add the technology to their own Web sites.

Digital's Connectivity Software Business Unit plans to make Alta Vista a product or service offering as early as this spring, company officials said.

Digital is analyzing how to package Alta Vista as a product for corporate users who set up large intranets, said Jeanette Horan, vice president of product development at the software unit. The firm also may offer Alta Vista to businesses that set up home pages that need a search engine, such as a publisher that offers a list of books and other materials.

Hard hitting

Digital's Alta Vista Web site has received the following number of hits:



*Site introduced to public

Horan said several companies, including software developers and database systems vendors, have approached Digital about using the search and index functions of Alta Vista with their products. "This is of value to anyone who's implemented a client/server application with Internet technology as the protocol," Horan said.

Observers said they can see Alta Vista's potential as a commercial application. The technology now runs on Digital's Unix and Alpha servers, but analysts said Digital must decide whether to make Alta Vista available on other vendors' hardware and on operating systems such as Windows NT.

"If they could do it for Windows NT on Alpha, that would open things up," said Michael Sullivan-Trainor, an analyst at International Data Corp. in Framingham, Mass.

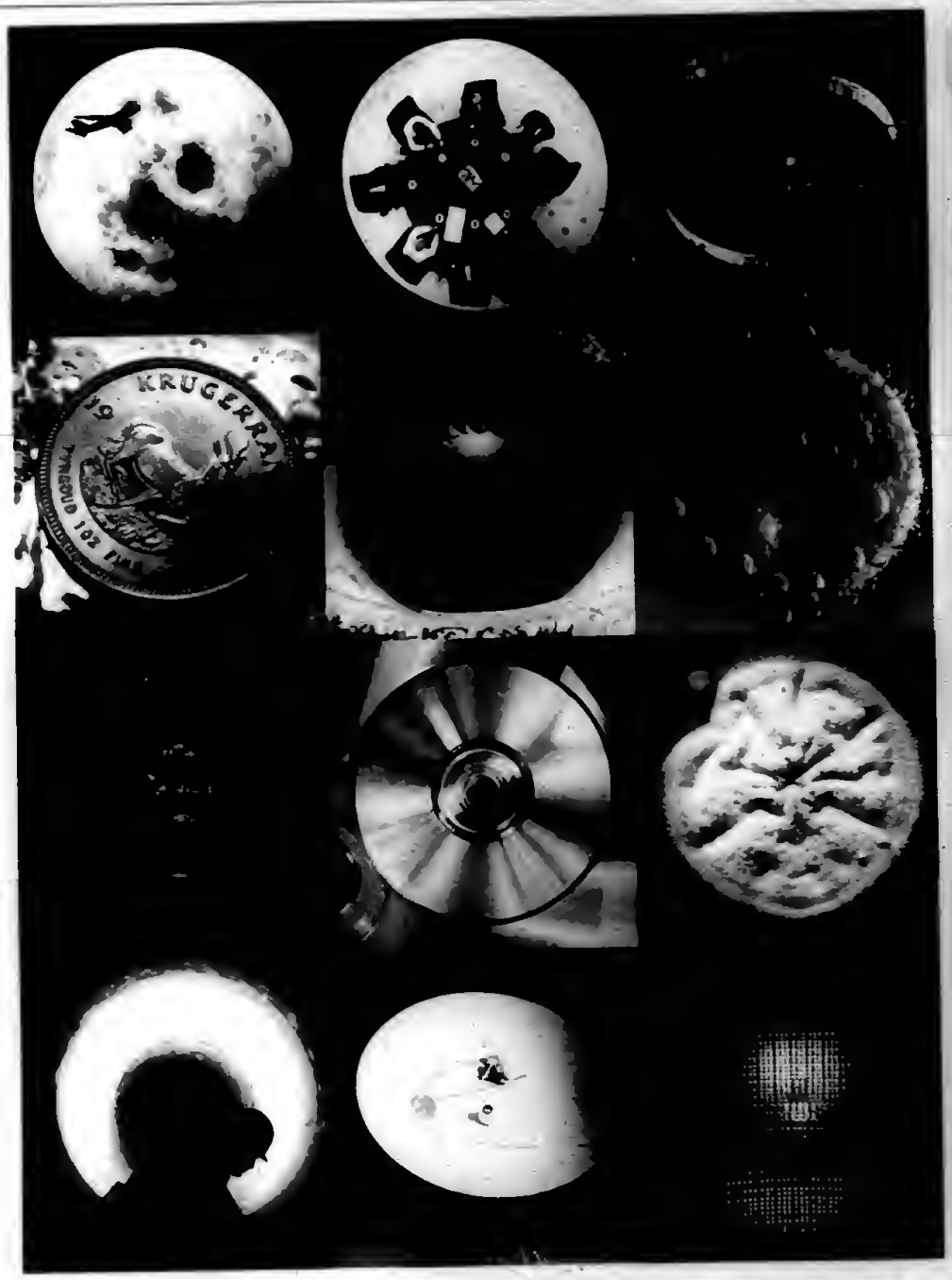
And whatever Digital decides, competitive offerings await Alta Vista, analysts said. Notable among these are topic Search for Windows NT, a search engine from Verity, Inc., and Surfboard from Fulcrum Technologies, Inc., which is available for Hewlett-Packard Co.'s HP-UX.

Consultant Dean Hopkins, founder of Cyberplex Interactive Media, Inc. in Toronto, said publishers and media companies that establish Web sites are prime candidates for any released Alta Vista package.

"With the archiving done [for a major publisher], you can imagine the scope of that work and the searching nightmare that could cause. . . . The indexing power that has been shown" by Alta Vista would be valuable, he said.

Rob Young, a software engineer at Vu/Text Library Services, Inc. in Philadelphia, which makes archival systems for libraries, said he is high on Alta Vista as a potential application but wouldn't separate it from Digital's AlphaServer. Its performance could lag, he said.

Indeed, search results from the Alta Vista Web site can be like too much of a good thing, Young said. "It's nice, but it's like being on the [receiving] end of a fire hose," he said.



New Products

Balboa Software has unveiled Library Master 3.01, a database manager for World Wide Web documents.

According to the Willowdale, Ont., company, Library Master 3.01 is a bibliographic database manager that can catalog an organizational library and manage the bibliographic citations for a book, article or thesis. Users can create documents for the Web, including reference lists, annotated bibliographies and subject bibliographies, in Hypertext Markup Language (HTML), by selecting HTML as the output file format.

Library Master 3.01 was designed to create annotated and subject bibliographies, periodical indexes, catalogs and acquisition lists.

It works with most Windows and DOS word processors and runs on any PC-compatible computer.

A single-use version of Library Master 3.01 costs $250.

▶ *Balboa Software*
(416) 730-8980

CE Software, Inc. has unveiled WebArranger 2.0, an Internet organizer.

According to the West Des Moines, Iowa, company, WebArranger 2.0 is an object-oriented database that lets Macintosh users capture and store any type of data element from any source. This may include Internet addresses, World Wide Web pages or entire Web sites, including graphics, contacts and QuickTime clips.

WebArranger 2.0 lets users capture, organize and control the information and integrate it into their computing environments.

WebArranger 2.0 works with several Web browsers, including Netscape Communications Corp.'s Navigator 2.0.

WebArranger 2.0 also includes a uniform resource locator (URL) validator for updating URL information and a feature that redials busy file transfer protocol sites at defined time intervals.

The product also includes technology to capture information with a single keystroke from any source, even if WebArranger 2.0 isn't running.

WebArranger 2.0 also includes The Forefront Group's WebWhacker, a site-capturing application that lets users copy multiple pages or entire Web sites to a hard drive.

WebArranger 2.0 costs $100. A 30-day demonstration version is available at http://www.cesoft.com.

A Windows version will be available this summer.

▶ *CE Software*
(515) 221-1801

Ipswitch, Inc. has introduced a PowerPC version of IMail Server for Microsoft Corp.'s Windows NT.

According to the Lexington, Mass., company, the PowerPC version of IMail Server for Windows NT is a high-performance, electronic-mail product that works with any Post Office Protocol 3 client. It lets users consolidate different internal and Internet E-mail products with a common mail server.

The product features a program to manage user accounts, a remote administration utility, a rules-based sorting and processing system for sorting incoming client E-mail and unlimited user account support.

The PowerPC version of IMail Server for Windows NT costs $696. Free evaluation copies are available at http://www.ipswitch.com.

▶ *Ipswitch*
(617) 676-5700

Dataware Technologies, Inc. has unveiled NetAnswer, server software for the World Wide Web.

According to the Cambridge, Mass., company, NetAnswer is a management, query and retrieval system for the Web that lets large-scale information providers distribute high volumes of data, text and multimedia content across the Internet. Providers can arrange external and internal access via the Internet to full-text databases.

NetAnswer was designed as a turnkey option for information providers who plan to make content available via the Internet.

It is compatible with all standard browser interfaces and Web servers through a common gateway interface.

Pricing for NetAnswer starts at $15,000.

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The Equitable Life Assurance Society of the U.S.
Ericsson Data Services Americas
Kobelco
Lowe's Companies, Inc.
McDonnell Douglas
Milwaukee County Jail
Mitsubishi Motors Corporation
Motorola
Nasdaq Stock Market
New York Mercantile Exchange
Nippon Steel Information & Communications
Nomura Research Institute
Picker International, Inc.
Premier Solutions Ltd.
Recruit
Regional Justice Information Service Commission
SABRE Decision Technologies (SDT)
Setpoint Inc.
Springs Industries, Inc.
State of Alaska
State of Arizona
State of California
State of Florida
State of Indiana
State of Kansas
State of Missouri
State of Nebraska
State of North Dakota
State of New Mexico
State of Oregon
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Firm reaps benefits of arduous trip to SAP, 70

Corporate Strategies

Physicians use ISDN as lifeline to patients

Telemedicine gains support, cuts costs

By Neal Weinberg

The growth of ISDN in the past year has been fueled by telecommuting and Internet access. Now, telemedicine is emerging as another viable application.

Hospitals and health organizations are finding that Integrated Services Digital Network (ISDN), with its ability to carry voice, video and data on one line, is a cost-effective way to bring medical services to remote locations.

New England Medical Center in Boston is at the forefront of the telemedical trend. The hospital uses ISDN lines to let specialists in Boston view fetal ultrasounds that are being conducted at clinics across Massachusetts.

And it has an ISDN line to Buenos Aires so cardiologists in Boston can offer second opinions to Argentinian heart patients.

Divide and conquer

John Patterson, chief information officer at the hospital, said his strategy for implementing ISDN has been to avoid asking hospital administrators for a multimillion-dollar rollout. Instead, Patterson went to the department heads, spelled out the cost per month to lease ISDN and pointed out specific benefits for each department.

For example, physicians can send a one-minute echocardiogram from a remote site in Massachusetts to New England Medical Center over ISDN for about $6, which is far cheaper than having a courier service deliver the film.

Psychiatry over ISDN is another telemedicine application in use — this one by the Upper Peninsula Telemedicine Network in Marquette, Mich. ISDN provides a video link so psychiatrists in Marquette can conduct sessions with patients at 11 clinics and small hospitals in the remote section of the state, said Danielle Waggoner, telemedicine coordinator for the network.

But she cautioned that the technology isn't without its glitches. She said she has experienced repeated line drops.

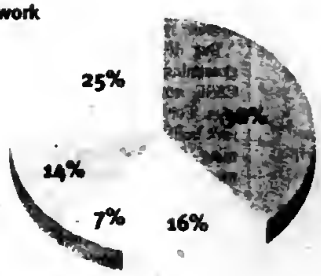
Before ISDN was used to link five hospitals in the Syracuse, N.Y., area, outlying hospitals would send echocardiograms to specialists in Syracuse via videotape.

Now, doctors in Syracuse can perform long-distance triage on cardiac patients in real time and determine which cases need to be transported to the central hospital, said Tim Kilpatrick, technical director of the Carenet project. The State University of New York Health Science Network runs the project.

ISDN also is used to transmit large radiology and pathology image files, Kilpatrick added.

The use of ISDN for telemedicine is becoming more popular, said Sanjay Mewada, an analyst at The Yankee Group in Boston. He said it is too early to tell whether telemedicine will achieve mass-market status or whether it is destined to be a niche application.

When will ISDN become a significant part of your network access buying plans?



BASE: 200 TELECOM MANAGERS

Source: International Data Corp., Framingham, Mass

MIS director Rick Smith: *California Pizza Kitchen's new client/server network has helped to improve efficiency and cut costs*

Pizzeria eats up client/server pie

By Laura DiDio

California Pizza Kitchen is relying on more than just new toppings and secret recipes to improve its profit margins.

A new client/server network has improved the restaurant chain's profit margins by as much as 5% in some stores and has allowed California Pizza Kitchen to slice its costs, said Rick Smith, director of MIS at the company.

The setup also has allowed the company to automate and speed up the time it takes to perform routine tasks such as adding up the day's sales receipts. The biweekly payroll data, which used to take at least a day to tabulate, takes only eight minutes to transmit from 77 restaurants nationwide. The data is transmitted via eight 28.8K bit/sec. modems.

More people time

The result: Store managers spend an "average of 15% more time in the restaurant assisting customers," Smith said.

To accomplish all this, California Pizza Kitchen recently installed Microsoft Corp.'s Windows NT Server and RemoteWare, a software connectivity package from XcelleNet, Inc. in Atlanta. This setup has been installed at corporate headquarters in Los Angeles and at restaurants nationwide.

The company wanted a network environment that would let it use one network operating system for point-of-sale functions — including placing orders and paying the check — and back-office tasks such as tracking food costs and inventory.

It chose the Windows NT Server 3.51 platform instead of expanding its Novell, Inc. NetWare 3.12 networks because NetWare would have "doubled our hardware costs and would also have required additional support staff," Smith said. NetWare also would have added complexity and increased the number of potential points of failure, he said. In the next 18 months, the company will replace the administrative NetWare file servers with Windows NT Server.

By contrast, Windows NT Server can function as an "all-in-one" file and print server and an applica-

Pizzeria, *page 70*

Firm reaps benefits of arduous trip to SAP

Oki Telecom takes long route to R/3

By Julia King

Three years and $4 million ago, Oki Telecom set out to implement SAP AG's R/3 enterprise software at its cellular telephone manufacturing unit in Atlanta.

It finally switched to the new system eight weeks ago, but oot before clearing some major hurdles and significantly changing employees' work lives.

During the implementation, consultants from three different organizations came and went. At one point, the entire R/3 project team was disbanded and then reconstituted.

Executive resistance

Another major challenge was a lack of buy-in from top management at the company's Japanese parent firm. "They came with preconceived ideas about SAP," said George Steelman, director of information systems.

"They had some experience with it in Japan, and it didn't fit Japanese manufacturing," he said. "As we progressed into the installation, implementation people were told to make SAP look like the legacy system, so we didn't take advantage of any change in business processes. What we're doing now is doing that after the fact when it could have been done on the installation side."

Last spring, executives in Japan who were exasperated by project setbacks and delays finally set a six-month deadline for the cutover.

"The president said, 'This is how many dollars you've got, and this is the time frame. Go do it.' So we did," said Barbara Haag, the project's manager.

A ways to go

Lots of R/3 systems are [illegible] running. Of the 770 R/3 systems deployed at companies with annual revenue of $250 million to $1 billion, 259 were in production as of last September.

That was June 1995, the same month that Oki's internal team contracted with consultants from SAP. Those consultants used the vendor's accelerated implementation methodology to map out the overall project and configure the R/3 software to Oki's specifications. "It was all laid out for us. We had a work plan, which SAP put together. We followed that and stayed on schedule, and did what we were supposed to do," Haag said.

Was it all worth it?

One advantage is that Oki tracks its manufacturing resource planning data daily instead of monthly. "So I see a benefit in that we can purchase on a daily basis, cut inventory oo hand and improve inventories," Steelman said.

But ask the same question again in six months, he added. By then, "the real benefits will be clear because people will be able to see all of the things that they can do with the system."

Overtime

In the meantime, Randy Glenn, a shipping scheduling analyst, puts in 60 or 70 hours per week, compared with a pre-R/3 average of 40 or so hours per week.

Much of the additional time is devoted to fine-tuning the new system, Glenn said.

"I had a lot of bot keys tweaked with the old system that SAP currently does not seem to offer for functions like saving to text files. So my job required a lot of new reports to be written," he explained.

Programmer/analyst Dan Dorsey's hours and the nature of his work hasn't changed all that much. "A programmer is a programmer," Dorsey said.

But prior to the implementation, Dorsey went through 30 training classes, including sessions in SAP's ABAP programming language, which made him extremely popular with recruiters. "About a year and a half ago, when I was first starting up, there were a lot of people calling me because they knew I had ABAP training," he said.

Oo the end-user front, Steelman said he expects a certain amount of frustration will continue, at least for the next few months, among the 65 or so people now using R/3.

"There's a natural resistance to change. The frustration also comes from the fact that this is not a load-and-go system," he said. For example, if a current type of purchase order doesn't work under R/3, "it's up to users to get hold of their implementation team member and change things and get a process that does work," Steelman said.

BellSouth breathes new life into old billing system

By Thomas Hoffman

Determined to keep pace with the shifting telecommunications landscape, BellSouth Corp. is reengineering its more than 20-year-old legacy billing system with object-oriented tools.

Such tools are especially attractive to companies that need to make systems changes on the fly to meet shifting market conditions. And conditions will indeed shift now that President Clinton has signed the sweeping telecommunications reform bill into law.

The law allows local telephone companies such as BellSouth, long-distance carriers and cable operators to compete in one another's markets [CW, Feb. 5].

BellSouth had some early success using Texas Instruments, Inc.'s Information Engineering Facility (IEF) computer-aided software engineering (CASE) software to improve its IBM MVS customer billing systems, according to Bert Williams. He was recently named assistant chief information officer at BellSouth.

For example, the company used IEF to roll out an IBM MVS/DB2-based regional street address system in early 1994.

But despite its staunch programming disciplines, the IEF CASE software has shortcomings. For example, the software isn't built for the rapid programming that BellSouth needs to meet "compressed time frames" for rolling out new telecommunications products, Williams said.

BellSouth has teamed up with American Management Systems, Inc. and uses object tools from that company, Hewlett-Packard Co., Sybase, Inc. and Oracle Corp. BellSouth in Birmingham, Ala., has osed object tools since the middle of last year.

So far, BellSouth has added new billing modules to its system, including an adjunct system to handle billing for a residential broadband pilot launched last summer in Chamblee, Ga.

BellSouth also uses object tools and Smalltalk and C++ programming languages to segment customer billing data for the long-distance and local telephone bills it sends to customers in its nine-state region.

BellSouth in January began sending the combined billing statements to customers in Georgia.

Customers in the eight other states it serves will receive the diversified statements in the next six months.

Keeping pace

BellSouth and the other regional Bell operating companies face a host of challenges as they try to tweak their aged billing systems to meet new market opportunities, such as cable televisioo and electronic commerce services.

"The Baby Bells are going to have a problem when long-distance carriers get into the local markets" in the next 12 to 24 months, said Jeffrey Kagan, president of Kagan Telecom Associates, a market research firm in Atlanta.

Because their back-office systems are generally more advanced, long-distance carriers "have the advantage of quality of service and accuracy of billing."

That will force the Baby Bells to "reshape their image" in the emerging competitive landscape, Kagan added.

Pizzeria picks client/server

CONTINUED FROM PAGE 69

tions server, Smith said. "Windows NT Server let us hit our target of six months from inception to rollout, and we didn't need to hire additional managers," Smith said.

RemoteWare lets the company's managers and district managers, who often travel among three or four restaurants a day, access the food cost system from the road. This lets them keep current with inventory levels, recipes, sales and personnel schedules.

RemoteWare also has a communications automatioo facility that ensures that the desktop environment is in sync for end users in corporate offices, the restaurants and remote and mobile users' laptops.

Smith said the combination of Windows NT Server, Microsoft's BackOffice application suite and RemoteWare has made for more efficient operations at the restaurant chain. With the new network and remote connectivity package, California Pizza Kitchen managers can easily track and monitor every aspect of the operation. That includes making informed decisions about how much labor each restaurant requires, when to make all entrees and side dishes and how much staff is needed.

Smith said the setup has allowed the firm "to trim the fat from the organization and given us better control of the bottom line."

California Pizza Kitchen has installed Windows NT Server, NT Workstation, SQL Server and XcelleNet's RemoteWare software to deliver these advantages:

- Store managers spend 15% more time with customers and less time performing administrative tasks
- Labor scheduling and labor management tasks are automated
- Information on itemized food spending is received quickly
- Recipe development is faster
- Daily sales receipts are processed quicker
- Payroll data is collected from 77 stores in eight minutes
- Profit margins have risen 5%

TitleLink teams up real estate players

Notes environment drives on-line service

By Suruchi Mohan

When Doug Frate bought TitleLink, he inadvertently made a commitment to Notes.

Frate, an operations manager at Nations Title, Inc. in Irvine, Calif., isn't the only one. During the past eight months, at least 200 organizations in the real estate industry have taken a crash course on Lotus Development Corp.'s Notes groupware platform after signing on with TitleLink.

TitleLink is a Notes-based on-line service that has been around since last June. It allows all parties involved in a real estate transaction — lenders, brokers, title companies and real estate agents — to put their documents in a Notes-based repository and share them.

Groundbreaking tool

"This is something new in the mortgage and real estate industry," said Bruce Forge, technical reviews editor at "Mortgage Originator," a real estate magazine.

Proprietary systems may have done this internally within a company, but they have never unified a group of vendors, he said. "This is a powerful tool," Forge said.

TitleLink software was developed by the company of the same name in Dallas. The service is available on AT&T Corp.'s Network Notes for those who don't want to invest in a Notes server.

So far, so good, users say.

"Thank goodness we have it," said Clark Damron, vice president of marketing for mortgage services at FTF Financial Corp., a mortgage brokerage in Fountain Valley, Calif.

TitleLink has allowed brokers to take on more business and has eliminated the need to use the fax machine or the telephone, Damron said. But he and other TitleLink users said it's still too early to quantify results.

FTF Financial puts all information on a bulletin board called the "electronic closing table."

For example, lenders can post underwriting criteria, so the mortgage company can find all the information it needs and conduct a paperless transaction. Real estate agents, at the same time, can use this as a message center to check a particular document.

> "This is something new in the mortgage and real estate industry. This is a powerful tool."
>
> *— Bruce Forge, editor, "Mortgage Originator"*

The company wants to expand its electronic closing table to include all its customers, such as title and escrow companies. And it plans to set up a workflow process to automate the whole real estate transaction, including appraisal, lending and document transmission from the real estate agent and title company.

In this setup, the paperwork would flow automatically from one player to another.

Kerry Hughes, product manager at Lender's Service, Inc., an appraisal, title and closing management company in Coroapolis, Pa., plans to launch a pilot test with TitleLink that will complement Lender's proprietary systems. Hughes is concerned because her company hasn't used Notes, and a new implementation is always scary, she said. But some clients are asking for the service, Hughes said.

Reasonable expense

The TitleLink service is available for $75 per site. It costs an additional 33 cents for each minute that the user is hooked up; this money goes to TitleLink, and users don't have to pay any separate phone charges.

Users say the service pays for itself in sheer convenience.

For example, lenders or customers of title companies used to have to call the title company to check the status of a transaction. Now, they simply go to their PC, log in to the system and pull up the transaction, said Jody Lane, president of TitleLink.

"They will see everything the title company has done right up to the last five minutes. If they want that document, they can click on it and print it — provided, of course, that they have access rights to it," Lane said.

Sperry Rand

Briefs

Bank crash means no cash

Snafus during the conversion of an automated teller machine (ATM) system left thousands of First Massachusetts Bank customers unable to get their money during the Presidents' Day weekend. The bank's information systems staff worked around the clock to fix the problem. Officials at the bank in Worcester, Mass., said they were stymied by hardware and software incompatibilities in the ATMs. And they encountered an error in calculating customers' personal identification numbers when they used a decryption algorithm supplied by Shawmut Bank, the former owner of the ATMs. Shawmut was recently purchased by Fleet Financial Group in Providence, R.I.

IBM teams up with Entex

IBM Credit Corp. in Stamford, Conn., plans to make lease financing available to customers of Entex Information Services, Inc., a PC-oriented systems integrator in Rye Brook, N.Y. The deal will allow Entex to generate IBM credit proposals and end-user leasing contracts for customers, officials at the companies said. Joint marketing also is planned.

Fast mortgages through IS

CrossLand Mortgage Corp. and the Federal National Mortgage Association have introduced the "30-minute mortgage," a service that CrossLand will offer through Fannie Mae's MorneePlus loan decision system.

NCR's big demo

NCR Corp. recently demonstrated what it calls the world's largest data warehouse. The 11T-byte data warehouse uses NCR's Teradata database, WorldMark's 5100 massively parallel processing server and EMC Corp.'s storage technology.

Oracle, user group reconcile

Oracle Corp. and its American user group are moving toward a reconciliation. Citing differences over control and money issues, the International Oracle User Group-Americas last month said it would hold its annual event at a different place and time than the annual Oracle event. Oracle said it would refuse to participate. Work is reportedly under way toward a compromise arrangement that is expected to be announced within the next few weeks.

Utility chooses outsourcing

Central Louisiana Electric Co. has outsourced some of its back-office operations to Affiliated Computer Services, Inc.'s (ACS) DataDirect division. Under the multiyear contract, ACS DataDirect in Dallas will give the utility bill-image preparation, address cleansing and presorting, bill printing and intelligent mail insertion services.

Are You Near the 4GB Limit?

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SOFTWORKS

SOFTWORKS

Managing

To err is human — and how. These managerial bloopers, gaffes and jaw-droppers prove that . . .

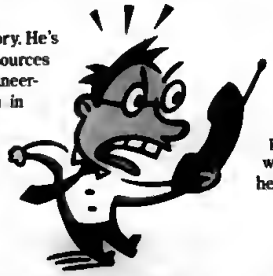
It's a blunder-ful life

By Jeremy Schlosberg

SO YOUR BOSS is in the Big Meeting, with the Big Vendor, eager to work out the details of the Big Deal. He loves this stuff: this win-win, partnership stuff; this relationship-fostering, market-building stuff.

Only you don't know this. You should — he hired you, you work for him — but you don't. You were trained in some old-style, hardball-crazy shop by some mindless macho role model who inculcated you with the idea that vendors are there to exploit, that vendor representatives exist on the other end of the telephone to beat up on.

So what happens in the Big Meeting?



Let Lew Temares finish the story. He's vice president of information resources and dean of the College of Engineering at the University of Miami in Coral Gables, Fla., and he's the boss in the story. There be is, ready to talk about a multimillion-dollar partnership opportunity, but instead, the vendor's team backs away. First, it's subtle. "They were hesitant," Temares says.

But Temares pushed the point. He sensed the vendor wasn't saying something, though he had no idea what it was. Finally, Temares says, the top vendor executive at the meeting said, "'Look, we're not going to get into bed with you. You have been treating us like garbage.'"

This was news to Temares. In a corporate culture that promoted the idea of cooperative relationships with vendors, it turned out he had a Neanderthal, junior-level telecommunications manager "threatening and coercing" the vendor's sales reps.

Temares assured the vendor of his immediate intention to correct the problem. After corroborating the story with a second vendor, Temares sent the junior manager packing. "What he did was affect our good name — the whole university's good name," Temares says.

Ah, junior managers. Sure, everyone makes mistakes, but some mistakes linger in the memory of the senior manager on whose watch they occurred. And despite the underlying technological nature of information systems jobs, these egre-

F.Y.I.

Fight chaos with chaos

Ever feel frustrated because nothing seems to go as planned? Stop feeling like a dummy. Poor planning isn't your problem; your problem is the illusion that you can control the universe.

Advocates of complex systems theory — also known as chaos theory — say the world is a complex sprawl of gazillions of interacting variables, more like the swirl of city traffic than the tidy relationships in computer algorithms.

It's tough to implement complex systems principles today; most of the work consists of early academic research. But Kenneth Massey, an information systems executive at Cementos Mexicanos (Cemex), the giant Mexican cement maker, is dressing this theory in overalls and work shoes.

Over the next 18 months, Cemex will roll out chaos theory-based systems in Mexico's eight largest cities. The goal is to improve the delivery and the quality of its cement by anticipating chaos rather than eliminating it.

Massey says he hopes chaos theory can help solve a long-standing headache: getting mixing trucks to construction sites at the right time. Cemex wants to predict when the

Surf's up! We rate the consultants' Web sites. Page 74.

gious mistakes often have more to do with people than technology.

For instance, as Temares' tale indicates, it isn't unusual for vendor relations to be the arena in which a deficient junior manager shows his true colors. Frank Petersmark, technology services manager at Southfield, Mich.-based Amerisure Cos., will forever remember a nasty little show one of his junior-level people inadvertently put on during a vendor visit.

Petersmark and the underling were meeting with their counterparts from a database vendor. This happened not to be the vendor Petersmark's junior manager most preferred. After the meeting, the four found themselves paired off. Petersmark and the senior vendor rep noticed that the other pair was missing and went to investigate.

Swinging back around a corner, Petersmark found his guy yelling at the vendor's rep, using "pretty direct language. Basically, he was telling them how much their software sucked." The minute the junior manager saw Petersmark, he blanched and excused himself. After Petersmark apologetically shepherded the guests to the elevator, he confronted his hotheaded employee.

"He had some personality problems in general," Petersmark says, in retrospect. In the end, this manager was only with the company for 11 months. "But it was a very long 11 months."

Interpersonal skills

Maybe it's just interpersonal relations in general that some junior IS managers have trouble with. John Crary, vice president of information technology at Lear Corp. in Southfield, Mich., remembers an operations manager who worked for him at another company who was especially attached to the security system in the computer room.

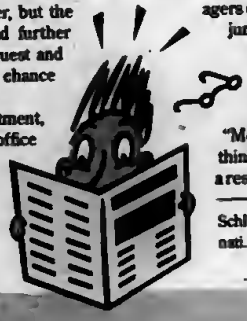
Visitors interested in the computer would be led to the help desk area, where the operations manager would talk about the facility, then show them a video tour of the inside. This virtual visit made it far easier for the operations manager to maintain security, and it satisfied most visitors' curiosity.

One visitor, however, wasn't satisfied. This visitor happened to be the president of the company. He also happened to be the relatively new president of the company. New enough that the operations manager didn't recognize him. So this president arrived with a customer from the Far East. They listened to the spiel and watched the tape. Then the president went to the computer room door. He still wanted to go inside. The operations manager told him he couldn't.

If only the president had then told the poor operations schlub who he was! If only the poor operations schlub had asked! Alas, it wasn't to be. The operations manager called for security, who blocked the way.

When everybody finally figured out who was who, our junior hero still clung to his territory and misguided sense of propriety. He said something along the lines of, "Well, I still can't let any foreign visitors into our computer room!" This was a huge insult to the customer, but the president, smart enough to avoid further confrontation, apologized to his guest and assured him they'd have another chance to see the room.

Crary, who headed the department, was soon called to the president's office and asked a question not unlike, "What the hell is going on here?" Crary was told to reassign the operations manager, which he did.



Even mistakes that didn't seem funny at the time can become funny in retrospect. Richard Brightman, vice president of IS at Liberty Travel, Inc. in Ramsey, N.J., was at New York-based RJR Nabisco, Inc. when the Michelangelo virus scare was in the air. Brightman thought he could head off some questions from end users by writing an article in the company newsletter about the virus, which was slated to arrive on a specific day. The article was to reassure everyone that IS was on top of it and that there was little, if anything, to worry about.

When the newsletters arrived in his office, the article appeared under this headline in all caps: Michelangelo virus coming to RJR Nabisco.

"I freaked out," Brightman says. He had proofread the article but hadn't seen the headline. "It sounded like the virus was a rampaging killer ready to wipe us out," he says. Fortunately, he was able to keep the newsletters from being distributed and was even able to go back and reclaim most of those that had already gotten out. But a few slipped through.

And the phone began to ring. "Aren't you supposed to be preventing this?" people asked.

Brightman had nobody to blame but himself, he knew. One reason, in fact, that many senior managers don't like to discuss mistakes their junior people have made is exactly that: They know they ultimately must share the responsibility.

"Lots of people don't like to admit failure," Temares says. "Me, I feel I learn from these things. I think I've become a better manager as a result." ■

Schlosberg is a freelance writer in Cincinnati.

If you try to control your business environment, it will never work. Instead, think: How to change working, and how can I ride it like a surfboard?

— Kenneth Fleming, director of systems and head of the corporate center for business processes, Compañía Mexicana, Monterrey, Mexico

trucks will arrive within minutes, not within an hour or more. Today, that's all but impossible because of congestion in Mexico's largest cities and other problems.

Massey declined to discuss technical details but says the 10 systems in development include an expert system. This encodes Cemex drivers' experience about where a truck should be — given the time, location and other variables — to deliver cement at the optimal time. Trucks will carry a satellite tracking system to test the expert system's analysis.

Massey says the benefits are already visible: In Guadalajara, where these systems are being tested, Cemex's telephone lines are no longer jammed with calls from customers checking on deliveries.

Customers with new orders can now get through. And Massey says the productivity of Cemex's Guadalajara trucks now equals the best in the world. — *Linda Wilson*

F.Y.I., *page 76*

Surf Sites

Practical Internet sites for IS managers

By Leslie Goff

Information systems consulting firms have rushed to the World Wide Web like moths to a light, but only a handful offer IS managers substantial content. Even at sites where you can find actual research reports, you end up reading a lot of marketing material to get there. The bottom line is that they all want to sell you their services, but some disguise their pitch better than others.

Below is an alphabetical guide to the sites of eight leading firms, rated to help separate the on-line brochures from the real goods. A tip: If the site has an index or table of contents, click on it first to get an overview and direct links.

Rating system

- Nothing more than an on-line brochure
- Compelling enough to check out occasionally
- Bookmark it to get fresh reports on a regular basis

Andersen Consulting
http://www.ac.com/

Andersen's site has received a lot of attentioo for its on-line search service, which employs a BargainFinder agent to find users the best on-line shopping deals. Between this feature and the overall content, the Chicago-based firm does an exemplary job using its site to relate its approacb to software engineering and design as well as its views on the challenges of delivering end-user applications.

Even IS managers who aren't seeking a consultant will find food for thought in the site's descriptions of ongoing Andersen research and systems development projects. Plus, a good number of full research reports are available to the diligent surfer. Particularly good areas to peruse are the Eagle Advanced Development Group and the Center for Strategic Technology Research.

Booz-Allen & Hamilton, Inc.
http://www.bah.com/

Somehow, this McLean, Va., firm's site is rated among the most visited 5% on the Web by Point Communications Corp. Granted, it is well-designed and easy to oavigate, and the copy is

thorough and well-written, but unless you are looking for a firm to partner with, you'll have little reason to visit.

Electronic Data Systems Corp. (EDS)
http://www.eds.com/

By far, EDS is one of the most dynamically presented sites, marked by a graphical navigatioo map that spotlights new material daily. That makes the Dallas-based company's site compelling, but the information is uneven. It's easy to spend a lot of time here without getting any exceptional data. The site has a search engine but no index.

Still, some of the industry-specific areas, such as government and financial, offer decent newsletters and case studies (of EDI clients, of course) as well as some unexpected benefits, including a link to the U.S. Chambers of Commerce home page and a video clip of the Indy 500.

Forrester Research, Inc.
http://www.forrester.com/

Still new to the Web, this Cambridge, Mass.-based firm's site promises more than it delivers. A graphical navigatioo map offers a button for "Forrester's Take," but you won't get Forrester's take on anything in particular.

Instead, you can put in your two cents in the poll of the week "What's Your Take?" or download a "Future of the Web" screeo saver, which will take you two (dedicated T1 line) to 40 (14.4K bit/sec. modem) minutes. It also will take that long to download an electronic research sampler. The rest is all advertising.

Gartner Group, Inc.
http://www.gartner.com/

Stamford, Conn.-based Gartner Group boasts the prettiest site and one of the best organized. It also has significant content, including 15 recent research notes that are changed and updated regularly. Examples: "Managing Information Security Risk Through 2000" and "SAP: Getting Ready for 3.0." One of the most unique and value-added features is a Tech Direct section that offers Internet surfers direct links to the sites of more than 75 computer vendors.

GartnerGroup

International Data Corp. (IDC)
http://www.idcresearch.com/

A lot of IDC's data is geared more toward technology vendors than users, but there's one key resource for both audiences: "Predictions 96: A Pivotal Year As the Industry Shifts Gears," which details 17 trends for the year, largely related to the Internet.

Unfortunately, while the Framingham, Mass.-based group's site has a wealth of real data, the benefits to IS managers are limited. The site is worth a visit, however, if you need technology- or market-specific information; it would be especially valuable if it included research from IDC/Link Resources Corp., which covers end-user computing issues. Instead, IDC/Link Resources gets only a sound bite here.

International Data Corporation

Meta Group, Inc.
http://www.metagroup.com/

You'll get a lot of Meta Group philosophy here, but you'll also get the "Meta Fax," a weekly newsletter the Stamford, Conn., company transmits to clients. It will be 2 weeks old by the time you see it on the Web but still current enough to merit an on-line read. Also useful are samples of research on a featured technology — in January, it was the Internet.

The Yankee Group
http://www.yankeegroup.com/

Each of The Yankee Group's service areas has a page here; they're all equal, but some are more equal than others. They all give you the Yankee lowdown and list available research, but fewer than half the pages allow you to access executive summaries. Significantly, the Workgroup Computing and Management Strategies pages are among the ones missing research. Instead, check out Client/Server Computing, Manufacturing Technologies & Practices, Data Communications and Wireless/Mobile Communications.

Unfortunately, much of the research available is more than 2 years old. Moreover, the site is tedious to navigate, given that it has no index and no graphical map. So mucb for Yankee ingenuity. ■

Goff is a freelance writer in New York.

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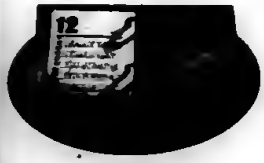
Managing



April Conferences

MANAGEMENT

The IT Services Summit: Service Trends '96. Orlando, Fla., **April 1-2** — Contact: Dataquest, Inc., Santa Clarita, Calif. (800) 457-8233.

National Ergonomics Expo and Conference. Chicago, **April 9-11** — Contact: Kotch and Poliak, Inc., New York, N.Y. (212) 486-6186.

HOT HAPPENING

AFCOM Spring '96. Chicago, **April 14-18** — Contact: Association for Computer Operations Management (AFCOM), Orange, Calif. (714) 997-7966.

HOT HAPPENING

Common Spring Conference. San Francisco, **April 14-19** — Contact: Common, Chicago, Ill. (800) 777-6734.

Joint Application Development Facilitation & Methodology Seminar Using Object-Oriented Software Engineering. Greenwich, Conn., **April 15-17** — Contact: Pierson Applications Development, Inc., Stamford, Conn. (203) 322-1606.

1996 International Conference on Information Technology Quality. Orlando, Fla., **April 15-19** — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

Forum '96: Global Commerce, Global Competitiveness. Research Triangle Park, N.C., **April 16-17** — Contact: North Carolina Electronics & Information Technologies Association, Raleigh, N.C. (919) 787-8818.

HOT HAPPENING

Executive Technology Summit '96. Rancho Mirage, Calif., **April 24-26** — Contact: Association Travel Management, Inc., Chicago, Ill. (800) 477-8920.

Innovations in Auditing and Technology Conference. Orlando, Fla., **April 25-27** — Contact: Institute of Internal Auditors, Altamonte Springs, Fla. (407) 830-7600.

Project Management Strategies for Planning and Implementing the Year 2000 Conversion. New Orleans, **April 29-30** — Contact: Global Business Research Ltd., New York, N.Y. (800) 868-7188.

INDUSTRIES

The Changing Information Technology Landscape: Helping States Adapt. Salt Lake City, **April 1-2** — Contact: National Association of State Information Resource Executives, Lexington, Ky. (606) 231-1905.

Product Data Management Conference '96. Boca Raton, Fla., **April 9-11** — Contact: Cimdata, Inc., Ann Arbor, Mich. (313) 668-9922.

Payments '96. San Francisco, **April 14-17** — Contact: National Automated Clearing House Association, Conference Registrar, Baltimore, Md. (800) 622-4277.

National Association of Broadcasters (NAB) '96. Las Vegas, **April 14-18** — Convention includes sessions about telecommunications and multimedia. Contact: NAB, Washington, D.C. (800) 342-2460.

Chargeback for Centralized and Distributed Processing. Washington, **April 15-17** — Contact: Financial Management for Data Processing, San Francisco, Calif. (415) 731-3706.

Telecoms 2000: Benchmarking in the Deregulated Telecommunications Environment of Tomorrow. Washington, **April 17-18** — Contact: ICM Conferences, Inc., Chicago, Ill. (312) 540-3859.

29th Annual Small College Computing Symposium. St. Cloud, Minn., **April 18-20** — Contact: St. Cloud State University, St. Cloud, Minn. (612) 255-4103.

Advances in Information Technology for Effective Capital Markets Risk Management. New York, **April 25-26** — Contact: Global Business Research Ltd., New York, N.Y. (800) 868-7188.

USER GROUPS

Unite Solutions Conference. Nashville, **April 15-16** — Annual meeting of the North American Unisys Users' Association. Contact: Unite, St. Clair Shores, Mich. (810) 773-4483.

ECO '96: Oracle Developers' Conference. Washington, **April 21-24** — Contact: East Coast Oracle (ECO) '96, Wilmington, N.C. (910) 452-0006.

Super! '96 RISC System/6000 SP User Conference. Ames, Iowa, **April 21-24** — Contact: Brent Hinkston, IBM Higher Education, Denver, Colo. (303) 773-5639.

TECHNOLOGIES

Customer-Focused Telecommunications: Lessons from the Masters of Customer Service and Satisfaction. New Orleans, **April 1-2** — Contact: ICM Conferences, Inc., Chicago, Ill. (312) 540-3856.

Web World: Working World Wide Web Solutions for Your Business. Orlando, Fla., **April 1-3** — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

HOT HAPPENING

Networld/Interop '96. Las Vegas, **April 1-5** — Contact: Softbank Expo, Foster City, Calif. (800) 488-2883.

Embedded Systems Conference East. Boston, **April 2-4** — Contact: Miller Freeman, Inc., Mountain View, Calif. (415) 905-2354.

Intranet N.Y., the First Java Developers' Conference. New York, **April 8-10** — Contact: Integrated Computer Solutions, Cambridge, Mass. (617) 621-0060.

Web Marketplace '96. Chicago, **April 9-11** — Contact: Jupiter Communications, New York, N.Y. (212) 780-6060.

Storage 2001: Empowering the Enterprise. Palm Springs, Calif., **April 10-12** — Contact: Gartner Group, Inc., Stamford, Conn. (800) 778-1997.

Multimedia Information Systems. Tempe, Ariz., **April 11-12** — Contact: Center for Professional Development, Arizona State University, Tempe, Ariz. (602) 965-1740.

Document Strategies Conference. Orlando, Fla., **April 14-17** — Contact: Xplor International, Torrance, Calif. (310) 373-3633.

HOT HAPPENING

DB/Expo '96. San Francisco, **April 15-19** — Contact: Blenheim NDN, Mountain View, Calif. (800) 232-3976.

Calendar announcements should be submitted at least eight weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO

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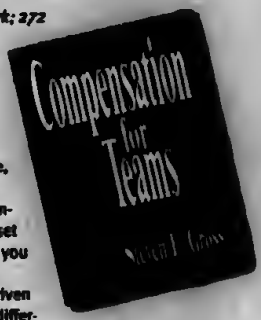
The Commodore VIC-20

IS Manager's Bookshelf

Disaster Recovery Planning for Computers and Communication Resources
By Jon Toigo
(John Wiley & Sons, Inc., New York; 330 pages; $44.95; paperback)

Here's an authoritative manual for anyone who is in charge of this necessary evil. The book explains how to get a program started, the process of risk analysis, how to develop off-site storage and systems and network recovery. The book includes sample forms, good graphics and an accompanying DOS disk. It isn't beach reading, but then disaster planning is no day at the beach.

Compensation for Teams: How to Design and Implement Team-Based Reward Programs
By Steven E. Gross
(Amacom, New York; 272 pages; $65; hardcover)



Paying people by team performance instead of individual performance is seductive, but the issues surrounding it are complex. How do you set base pay? How do you conduct reviews? Should process-driven teams be treated differently from project-driven ones?

Gross does a good job exploring these questions and offering a range of team-compensation plans. The book isn't specific to information systems, but it's a strong guide in an area that is gathering steam.

intel inside

The wait for new technology is getting shorter.

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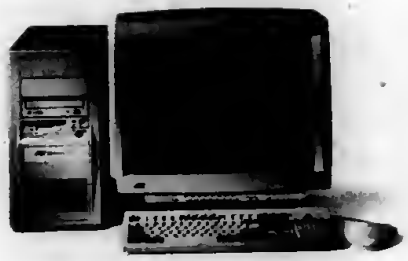

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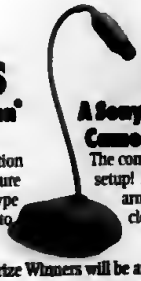

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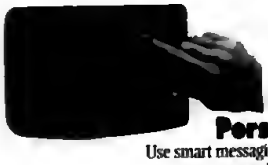

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This Week's TechnoTrivia Questions

1. What was the name of Oliver Wendell Jones's personal computer in the comic strip *Bloom County*?
2. Who sold Katharine Hepburn a computer in 1959's *Desk Set*?
3. By what name was IBM's model 5150 more commonly known?
4. What was the first home computer to sell one million units?
5. What computer company once had General Douglas MacArthur as Chairman of the Board?

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Look Before You Leap

Overcoming programmer discontent at home is just one of the challenges U.S. companies face when outsourcing work overseas or to U.S.-based 'body shops' of foreign programmers. Bridging geographic, cultural and technical gaps are some of the others.

Last in a two-part series

By Jaikumar Vijayan

It did not occur to programmer Linda Kilcrease to worry that her employer might one day replace her with someone from halfway around the world. Until, that is, the day late last year she found a pink slip tucked in with her paycheck. Kilcrease wasn't alone; she was joined by about 250 of her colleagues spread across three states.

Replacing them at the American International Group, Inc., which is based in New York, are foreign programmers, mostly from India. The foreign workers, whom Kilcrease had helped train just a few weeks before she was laid off, are employed by a large, U.S.-based software contracting firm.

Now, Kilcrease thinks often about the foreign programmers who are replacing U.S. workers like herself. She blames the U.S. companies doing the outsourcing as much as she blames the foreign programmers. "[The companies] are contracting away their responsibilities to their employees and their country," she says. "It is educational and economic suicide."

That reaction may not be far from the truth.

"The long-term implications are that jobs overseas are likely to increase faster than [software jobs] in the U.S., and in some industries, there may actually be a decline," says Capers Jones, chairman of Software Productivity Research, Inc. in Burlington, Mass.

Experts say it is hard to quantify the jobs that are being shipped overseas or parceled out to U.S.-based shops staffed by foreign programmers with short-term employment visas. But they agree the number is growing significantly.

"In many cases, what is going on is hidden. It is not very often that a company will lay you off and say, 'Oh, we sent your job to wherever,' " says Larry Richards, executive director of the Software Professionals' Political Action Committee (Softpac) in Austin, Texas.

Softpac is one of several organizations that is actively pushing for legislation that will limit entry into the U.S. of foreign programmers under H1-B, or nonimmigrant, employment visas.

MICHAEL GOLDMAN

"U.S. companies are contracting away their responsibilities to their employees and their country," says programmer Linda Kilcrease, who lost her job at American International Group to low-cost foreign programmers from a large software contracting firm. "It is educational and economic suicide."

The organization reflects growing domestic resentment against businesses replacing U.S. workers with low-cost foreign workers. This resentment is gaining political validation through the efforts of people such as Sen. Alan Simpson (R-Wyo.). Simpson, who sponsored a major reform of U.S. immigration rules in 1986, is now lobbying for legislation that will reduce from 140,000 to 90,000 the number of software programmers who can legally enter the country on nonimmigrant employment visas.

Leap, *page 81*

Look Before You Leap

CONTINUED FROM PAGE 79

"Unfortunately, under immigration laws as they exist, it is perfectly legal for American companies to fire American workers and replace them with foreign workers," Richards says.

The foreign workers who displaced Kilcrease and her colleagues at American International Group work for a U.S.-based contract programmer. In other instances, U.S. jobs simply are shipped overseas to contract programming firms based thousands of miles offshore.

Despite growing resistance at home, offshore outsourcing offers some very real advantages, and not all of them have to do with cost savings, insist U.S. companies that are outsourcing [CW, Feb. 26].

"The cost savings are not as great as they seem to be on the surface," says Vivian Schmidt, director of host application development at Dun & Bradstreet Software in Westboro, Mass. The company is outsourcing a year 2000 date-conversion project to D&B Satyam Software, a contract programming firm in Madras, India, that is partly owned by D&B Software.

One of the greatest attractions of tapping international resources, Schmidt says, is the ability to build project teams quickly for projects such as the year 2000 conversion. "We have a lot of work to do in a short period of time. [But] the fact is, there is a lot of competition for pretty limited resources [at home], so we need to take advantage of all the technical resources available to us [around the world]," she says.

Julie Cairns-Rubin, a former programmer at SeaLand Service, Inc. in Edison, N.J., is skeptical that the decision to send work overseas is driven by more than the availability of cheap labor. Cairns-Rubin lost her job late last year to contract programmers from the Philippines and India.

"If you have to train the people that replace you, how are they more skilled than you? And to say they work harder than Americans ... that's just ridiculous," she says.

Despite claims of multiple benefits by companies that outsource, the bottom line, says Jones of Software Productivity Research, is that it is simply far more cost-efficient to get some jobs done overseas than in the U.S.

"For many large corporations, software is important, but it is not part of their overall corporate strategy, and they are not sure how to manage it," he says. If someone else can manage it for them, especially at a lower cost, they are going to take advantage of it, he says.

Handling programmer discontent at home is just one challenge U.S. companies face. Managing offshore projects and programmers is another. It means bridging geographic, cultural and technical gaps.

When U.S. companies and their contract programmers are 10 time zones and 7,000 miles apart, the combination of time and distance amplifies the problems of managing off-site workers.

"You can't overcommunicate in this business — meet in person as often as your budget will allow," advises D&B Software's Schmidt.

To keep the information flowing, U.S. project development teams and their Indian counterparts use electronic mail, fax, hot lines for phone-based review sessions and videoconferencing.

Face-to-face contact is key

Because of the time difference, the two groups must work out mutually agreed upon windows of time for videoconferencing. Typically, this means an early start for the U.S. team and a late close for their Indian counterparts. They use these sessions — talking back and forth to jerky, blurred images of one another — to pore over project details, clarify questions and thrash out strategies.

"The hardest part has been the lack of face-to-face contact with the development teams there," says Robert Preece, director of software for Connectware, Inc., a manufacturer of mobile communications products based in Richardson, Texas. "Everybody wants to be successful. As a result, [the Indian programmers] sometimes tell our managers what they want to hear as opposed to what is really happening," Preece says. "If somebody says they will have something ready next Tuesday, they don't necessarily mean Tuesday. They may mean, sometime *around* Tuesday."

> "If you have to train the people that replace you, how are they more skilled than you?" – Julie Cairns-Rubin, programmer

> "Unfortunately, under immigration laws as they exist, it is perfectly legal for American companies to fire American workers and replace them with foreign workers." – Larry Richards, Softpac

Since early 1994, Connectware has outsourced IS functions and product development projects to Perfect Solutions, Inc., a contract programmer based in Bangalore, India.

"Generally, it is very difficult to understand the criticality of a client's problem when you are sitting thousands of miles away," says V. Ramakrishna, managing director of Verifone India Private Ltd. in Bangalore. "The biggest challenge is changing the mind-set of programmers here as to just how critical a problem is to a client."

Cultural issues, if ignored, can also create snags. As U.S. programmers come into closer contact with their overseas counterparts, small but nagging differences in attitudes toward problems and problem solving are uncovered.

"Some of the things that you take for granted are not a given in India," D&B Software's Schmidt says. "For instance, here in America, people who work for you will tell you when they disagree with you. Both the manager and the employee expect it. One of the challenges when we started [in India] was to convince [Indian programmers] that I expected the same of them."

The globe-spanning relationship can create challenges for domestic employees too, Schmidt says. Videoconferencing sessions, for instance, often mean starting work at 7 a.m. for U.S. team members. Or perhaps a team member is simply reluctant to go to India, Schmidt says.

Even details such as differences in accent and pronunciation can trip up otherwise intricately designed projects.

Satyam Computer Services Ltd. is a Secunderabad, India-based company that performs first-level help desk and support services for Caterpillar, Inc.'s IS department in Peoria, Ill. Using a sophisticated combination of satellite communications, leased telephone lines and fiber-optic links, Satyam responds to end-user problems and guarantees to resolve them within two hours.

That response time was threatened, however, by Satyam's Indian phone operators, who were unfamiliar with the pronunciation and accents of U.S. end users.

Satyam solved the problem by routing Caterpillar calls to an independent service provider in Vienna, Va., which takes down details about the nature of the call, then kicks it over to the appropriate manager in India. Caterpillar did not comment on the operation of its outsourced help desk for this story.

Relationship hinges on trust

In recognition of challenges such as these, U.S. firms experimenting with offshore outsourcing for the first time typically play it safe by shipping only low-end programming jobs in the initial stages, says Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass.

It comes down to building trust in the relationship. "Confidence building is not easy," says Vijay Srinrangan, managing director of Tata Unisys Ltd. in Bombay, India. "We first need to establish comfort levels before a customer is willing to entrust mission-critical work to us."

One way U.S. companies find their "comfort level" is by demanding a certain amount of on-site work by their Indian programming contractors, especially in the early and late stages of a project.

"No matter how motivated a company is in doing value-add from India, the nature of the beast is such that you have to spend about 20% of your time at the customer's site," says N. R. Narayana Murthy, chairman and managing director of Infosys Technologies Ltd. in Bangalore.

Ultimately, the experts say, partnering overseas is neither as straightforward nor as inexpensive as it may first appear. Travel and communications costs need to be factored in to the fully burdened cost of outsourcing work overseas. Just as important, cultural and time-zone issues must be addressed head-on.

What may be a final word of caution for U.S. companies poised to leap into the arms of foreign suitors is to be vigilant about project management. It is important to realize, Jones says, that when companies adopt outsourcing arrangements, they are no longer in full control of a major aspect of their corporate operations.

"If you are an industry leader who is getting a great deal of value from your software, you probably should not outsource and risk losing control over it," Jones cautions. ■

Vijayan is *Computerworld*'s senior writer for PC hardware.

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(c) OS/2	(g) Windows
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Networking Products	☐ Yes ☐ No

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Whether it's Oracle, Sybase or SQL, experts say embracing at least one relational database skill is now a must

By Melanie Menagh

The future looks very secure for information systems professionals with relational database experience. And your future is positively rosy if you can boast of experience with more than one database. But if you don't have at least one such skill on your resume, you had better be content doing exactly what you're doing oow.

"With the emphasis ou client/server programming, it's everything we're doing now, and it's everything everyone I'm talking to is doing. People who want to advance in this field are not going to be able to get away with not having these skills," says Cbuck Miller, MIS director at Spectrum Healthcare Services in St. Louis.

Miller's sentiment is echoed by IS managers across regions and industries.

"I see database skills as a critical competency in our area," says Ed Hutson, manager of global supply line management, systems and databases at AT&T Corp. in Wichita, Kan. "And from my experience of having people in my group hired away, obviously it's important to other people too."

Many employers are beginning to consider database experience essential, and prospective employees will be well-compensated for relational database knowledge, especially when it's combined with other expertise. M. Victor Janulaitis, CEO of Positive Support Review, Inc., a recruiting firm in Santa Monica, Calif., says it can mean double the base salary.

"If you've got skills, say, in [Microsoft] and Oracle and Internet, you'll be making $85,000 to $90,000 rather than $40,000 to $45,000. In Southern California, I can get a contractor with simple visual SQL skills at $90 to $120 per hour," Janulaitis says.

Skills that sell well

So which skill is best to have? Is Sybase the answer? Will Oracle be the lingua franca? Or is SQL Server experiencing a minirenaissance? The answer changes from region to region, from industry to industry and from time to time. But the pooh-bahs agree that job applicants absolutely, positively must know at least one relational database system.

"In our business, we see two differeot clients," says Donna Coombs, director of education services at Aris Corp., an information technology training outfit in Seattle. "Some people come in as individuals. With that group, about half are looking for Oracle skills. We also do on-site training for companies, and on that side, the demand for Oracle skills is much higher."

At Spectrum Healthcare, "SQL knowledge is essential in the current development environment," Miller says. "I've had people with no SQL experience. It was a bandicap for them, and I had to train them."

And a Sybase application was called for at EMI Records Group, North America, says Frank Piluso, now vice president of information technology at New World Communications Group, Inc., a TV production company in Los Angeles. "I know of people doing the same thing at Paramount," Piluso says.

"I see database skills as a critical competency in our area. And from my experience of having people in my group hired away, obviously it's important to other people too."

— ED HUTSON, ***manager of global supply line management, systems and databases at AT&T***

Oracle might have a slight edge at the moment, but some employers think Oracle skills easily cross over into Sybase or SQL Server skills and vice versa. Others disagree.

"No, I wouldn't hire someooe with another skill because I capitalize on people's strengths. If you've got a different skill, it becomes an obstacle; there are prejudices," Piluso says. "A person who works in Sybase likes Sybase. You can't deal with a user who's trying to define your business for you."

Piluso's solutioo? "It's not overkill to learn all of these skills if you're going to be a player; the more skills you have, the better."

Experts warn that merely knowing which buttons to push isn't enougb. Most IS directors look for a combioation of training and experieoce.

"Both are critical. Training is an initial step; beyond that, people need experience using the tool to gain real proficiency," Hutson says.

Employers also seek other supplemental skills, both technical and interpersonal. "You need to have some design-oriented skills paired with language-specific implementation skills. If you become a good application designer with experiences in screens, architecture, databases, that's transferable across a wide variety of products," says Herb Edelstein, a partner at Euclid Associates, a consulting firm in Potomac, Md.

Equally important: "You need to understand how a particular business operates and how to apply the technology to how people do their job," Janulaitis says.

Major markets

These skills are in particular demand in certain regions and industries.

"In the Seattle area, we see a lot of consulting firms and high-tech industries where people are wanted with Oracle and Informix and Sybase skills," Coombs says. "It's also true of the Denver market. Some of our best customers are across industry lines, like US West, Weyerhauser and Boeing."

For the broadest job opportunities, consider a niche with a concentration of national organizations, which are likely to require a more complex IS network. Promising industries include health care, education, entertainment, transportation, telecommunications and retail. But regardless of industry, most IS managers say they will need relational database expertise for some time to come.

"That core relational database programming perspective is what we're going to need over and over again in the future," Miller says. "SQL expertise spans a lot of different programming application languages. Informix can be used in a windows environment, in a direct terminal Fortran environment and all the way to a PC oetwork. Underneath is that basic database language throughout the whole thing. There are a lot of different directions you can go with that skill."

The important thing is to keep current and try to anticipate where the need will be.

"You want to be reactive in a proactive environment," Janulaitis says. "If companies are doing A, B and C, you want to be able to respond and go out and do it — to produce a solution, not tell them why it can't be done. Whatever skill you learn today might be obsolete in two years, but that's not the point. What skill you learn today will be the basis for what you'll learn in two years." ■

Menagh is a freelance writer in New York.

Topping the charts

SQL, Sybase and Oracle are in a tight race as the most sought-after relational database skills

SKILL	PREMIUM WILLING TO PAY	LEVEL OF DEMAND	CURRENT MARKET
Gupta SQLbase	8.7%	Medium	Niche
Sybase (relational DBMS)	8.5%	High	Mainstream
Oracle (relational DBMS)	8.3%	High	Mainstream

Source: 1995 Computerworld Skills Survey

- DATAMATION
January 15
1996

SYBASE?

"Powersoft [illegible] its users th[illegible] move [illegible] applicatio[illegible] the launch [illegible] PowerBu[illegible] program."

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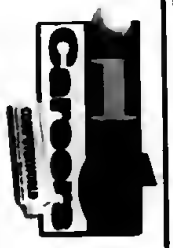

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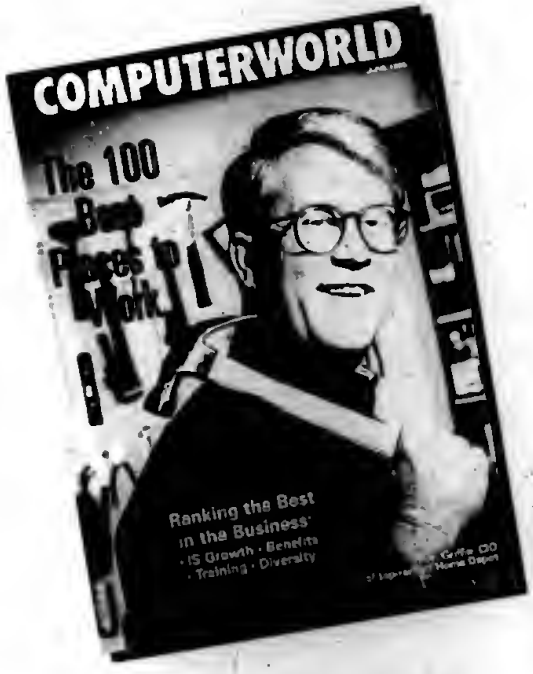

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Regional Scope

Both buildings and hiring *are on the rise in the Research Triangle*

Job growth explodes in Research Triangle

Be they Oracle or Unix, IMS or Cobol, opportunities abound in North Carolina

By Alan R. Earls

With a persistently low unemployment rate — only 4.2% last November compared with a national average of 5.6% — North Carolina is definitely a job hunter's market. Unemployment in the hot Research Triangle is approaching the record low levels set in the early 1970s, and information systems positions are among the hardest to fill.

"It's a real good market right now, and that tickles me," says Paul Dellinger, owner of American Personnel, Inc. in Charlotte.

Other recruiters share Dellinger's delight. Skills in Oracle Corp. databases, an AS/400 background, Unix, C++ and even IMS and Cobol credentials all open doors in the Triangle, the high-tech and industrial mecca that has mushroomed in the Raleigh, Durham and Chapel Hill area. And recruitment isn't confined to one business sector; it includes banking, high tech, manufacturing, textiles and distribution.

"About the only kind of skill that isn't in demand right now is technical writing," says Robert Gabler, director of business alliances at New River Technology, Inc. in Raleigh.

Open field

The fiercely competitive job market has forced some employers to cast a wide net to find talent.

"We do a lot of work to identify job candidates," says Charlotte Pedersen, vice president and project manager for high-tech recruiting at NationsBank Corp. in Charlotte. That has included running large advertisements in *The New York Times* and holding recruiting events in New York.

Pederseo says NationsBank is unique because of its infrastructure. "We are recruiting for all platforms, ranging from the IBM mainframe to the desktop and client/server," she says. In the works at NationsBank, and helping to keep demand for IS talent strong, is the construction of "Wall Street in Charlotte," a sophisticated and highly automated financial services market.

The textile industry, a traditional regional strength, is also putting out a large help wanted sign for IS talent.

A wide mix of IS skills are in demand at Burlington Industries, Inc. in Greensboro. "We have a staff of about 100 that is responsible for maintaining corporate treasury, payroll and accounting functions, and a data center that serves many divisions," says Ritchie Fishburne, director of corporate IS at the firm.

The IS job outlook among the region's electronics firms is also generally bright. There has been "an explosion in demand for network specialists and PC support" at Exide Electronics Corp. in Raleigh, according to Al Williams, director of corporate training and development at Exide and a human resources veteran. "We now have an investment in 700 to 800 PCs in our organization, [and they are] connected to several AS/400s. Everyone is networked and has access to the World Wide Web," he says. Williams says there will probably be more demand for object-oriented programming skills and C++ skills.

SAS Institute, Inc. in Cary needs "people who can write code and know data structures," says Charlie Duoham, a vice president of IS at the company. "For our development efforts, we tend to focus on C; in the support and administration area, it is Unix, PC skills and Novell networks," he says.

But technical skills aren't the only ones in high demand by the area's IS employers. Food Lion, Inc., one of the region's major grocery chains, seeks IS individuals with strong business skills.

Chris Ahearn, communications director at Food Lion, says, "There will be more demand for systems integration and project management skills rather than the current focus on project development." Also on the horizon is a move toward data warehousing and an increased emphasis on client/server skills.

Bob Fuller, director of training at Siemens Medical Systems, Inc. — one of several Siemens divisions in the area where hiring is strong — says he hasn't seen any big movement in salaries so far. Instead, more emphasis has been placed on benefits. For example, Fuller says the promise of flextime has helped to lure technical professionals.

"We let people work out their own hours as long as there is a clear commitment to be there when they say they will be there," Fuller says. ■

> **"Fundamentally, we are looking for people who can write code and know data structures. For our development efforts we tend to focus on C, and in the support and administration area it is Unix, PC skills and Novell networks."**
> **Charlie Duoham, vice president of IS, SAS Institute**

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Northern Telecom, Inc.	8,600
Glaxo	6,000
Winn-Dixie Stores - Raleigh, Inc.	4,300
Wake Medical Center	4,000
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Source: Greater Raleigh and Greater Durham Chambers of Commerce

Earls is a freelance writer in Franklin, Mass.

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PROGRAMMER ANALYST (2 openings) (Ref. 23096) - plan, develop, test & document comp. programs, applying knowledge of programming techniques & comp. systems; evaluate user request for new or modified programs; determine feasibility, cost & time required compatibility with current sys. & comp. capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp. Analysis, performance improvement, testing & implementation of duty drawback sys. using IBM 3090/IMS/DB2/COBOL, analysis & coding programs for enhancements in vendor reporting sys. using IBM/DATACOMM/VSAM/JCL/COBOL, analysis, design of ed. management sys. using ADW-CASE tool & coding unit & sys. testing application using IBM 3090/IMS/DB2. Systems design using UNIX, DBMS, COBOL & C. Reqs. Bach. in Comp. Sci., Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Programmer Analyst, System Analyst, Software Engineer, Consultant or Analyst/Programmer. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd ed. & exp. Must have some related exp. including systems design & using UNIX, DBMS, COBOL & C. $45,000/yr. 40 hrs/wk. 8:30a-5p.

PROGRAMMER ANALYST (2 openings) (Ref. 28496) - plan, develop, test & document comp. programs, applying knowledge of programming techniques & comp. systems; evaluate user request for new or modified programs; determine feasibility, cost & time required compatibility with current sys. & comp. capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp. Design & develop applications including insurance accounting sys., financial accounting sys., material accounting sys., inventory, purchasing & production using IBM AS/400 & other IBM mainframes, OS/400, RPG, COBOL, SDA, RLU, VAX, Data-General & LAN. Also use CASE tool & Debugger. Reqs. Bach. in Comp. Sci., Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Programmer Analyst, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Associate System Analyst or Q.A. Analyst. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd ed. & exp. Must have some related exp. which included sys. design & development & using each of the following: VAX, IBM AS/400, OS/400, RPG, COBOL, SDA & Data General. $47,000/yr. 40 hrs/wk. 8:30a-5p.

PROGRAMMER ANALYST (2 openings) (Ref. 23896) - plan, develop, test & document comp. programs, applying knowledge of programming techniques & comp. systems; evaluate user request for new or modified programs; determine feasibility, cost & time required compatibility with current sys. & comp. capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp. Analysis, design & development of an integrated welfare sys., process flow & data flow design, technical support using IBM 3090, CICS, DB2, MVS/ESA, IMS DB/DC, VS-COBOL II, QMF. Reqs. Bach. in Comp. Sci., Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed & exp. & 1 yr. exp. in job offered or 1 yr. related exp. as a Programmer, Programmer Analyst, System Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd ed. & exp. Must have some related exp. including analysis, design, development and using each of the following: IBM 3090, DB2, CICS and VS-COBOL II. $41,200/yr. 40 hrs/wk., 8:30a-5p.

PROGRAMMER ANALYST (2 openings) (Ref. 28096) - plan, develop, test & document comp. programs, applying knowledge of programming techniques & comp. systems; evaluate user request for new or modified programs; determine feasibility, cost & time required compatibility with current sys. & comp. capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp. Convert & maintain manufacturing, financial & business planning activities into automated systems, port existing systems in UNIX based platforms or SYBASE or Paradox client server platforms. Requirement analysis, data modeling, specification generating & sys. integration testing, providing technical support, developing Client-Server applications & using MS Windows, DOS, OS/2 operating systems running UNIFY, Paradox, SQL, C, C++ & ODBC. Reqs. Bach. in Comp. Sci., Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Programmer Analyst, System Analyst, Software Engineer, Consultant or Sr. Sys. Analyst. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd ed. & exp. Must have some related exp. which included developing client-server applications & using DOS, OS/2, SQL Server & C. $44,100/yr. 40 hrs/wk. 8:30a-5p.

PROGRAMMER ANALYST (2 openings) (Ref. 23796) - plan, develop, test & document comp. programs, applying knowledge of programming techniques & comp. systems; evaluate user request for new or modified programs; determine feasibility, cost & time required compatibility with current sys. & comp. capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp. Lead & participate in the design, development & implementation of end-user applications in a Client Server environment using MS Windows NT, OS2, IEF Ver 5-3 Composer, SQL Server, DB2, ES9000 MVS/ESA, DB2, IDMS, VSAM, IBM 3090, COBOL, CICS & CASE Tool ADW. Reqs. Bach. in Comp. Sci., Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant, Sr. Software Engineer, Jr. Executive (Systems), Jr. Programmer or Analyst. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd ed. & exp. Must have some related exp. which included using each of the following: IBM 3090, DB2, CICS, COBOL and CASE Tool ADW. $48,500/yr. 40 hrs/wk. 8:30a-5p.

PROGRAMMER ANALYST (2 openings) (Ref. 24096) - plan, develop, test & document comp. programs, applying knowledge of programming techniques & comp. systems; evaluate user request for new or modified programs; determine feasibility, cost & time required compatibility with current sys. & comp. capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp. Provide customer support, document & analyze insurance claim applications on PC Workstations under DOS using Visual Basic, Windows & C on IBM 3090 under MVS/ESA operating sys. using CICS, COBOL, DB2, QMF & SQL Server; design & develop a Client Server sys. & using Unisys A Series, IBM 3090, PC, ALGOL, LINC, Windows & Visual Basic. Reqs. Bach. in Comp. Sci., Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd ed. & exp. must have some related exp. which included designing & developing a Client-Server sys. & using each of the following: Unisys A Series, IBM 3090, PC, ALGOL, LINC, Windows & Visual Basic. $43,000/yr. 40 hrs/wk., 8:30a-5p.

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PROGRAMMER ANALYST required. Design, develop & maintain systems & software related to Airline operations & specifically in Food & Beverage systems using C/C++ programming, Object Oriented design/analysis methods & Oracle RDBMS on Windows & UNIX platforms plus PL/1, JCL & TSO on IBM MVS mainframe platforms. Bachelor's degree or its equivalent required in Math, Computers, or Engineering, plus 2 years experience in the job duties described above. Must have proof of legal authority to work in the U.S. Salary: $37,000/year for a 40 hour work week. Apply at the Texas Employment Commission, Fort Worth, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778-0001. J.O. Number TX7505266. Ad paid by an Equal Opportunity Employer.

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Multiple openings exist for a Programmer/Analyst for a software consulting firm. Duties include Analysis, Design, Development and Implementation of an Integrated Order Processing System, Process Flow and Data Flow Design, Data Modeling, Identification, Technical Support and overall design of order entry Subroutines, Warehouse interface parts of the system. Utilizing CICS/DB2/COBOL on IBM 3090 on the following hardware, software and languages: IBM 3090, MVS/ESA, CICS, DB2, VS COBOL II, JCL, JES2, MVS/EXA, FLASHER, CEDT, CEDF, INTERTEST, ISPF/PDF, TSO/E, SPUFI, DB2, QMF, File-AID, CLIST and CA7/11 (UCC7/11). Requires a Bachelors Degree in Computer Science or Computer Engineering. Requires two years experience in the job offered or two years experience as a Software Engineer to include analysis, design, development, testing, and implementation of computer software utilizing the following hardware, software and languages: IBM 3090, CICS, DB2, VS COBOL II, MVS/EXA, INTERTEST, MVS/ESA, SPUFI, JES2 and TSO/E. Salary is $44,000.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 915, Detroit, MI 48202. Ref #300-96. Employer paid ad.

Programmer/Analyst (Eng. & Scientific). 40hrs/wk, 8:30-5:30. $40,000/yr. Provide application design & development of client/server based medical management software packages using Visual BASIC, SQL, API Functions & C++ through ODBC by using ODBC API Functions on Microsoft SQL server utilizing MS Windows, Windows Groups, Windows 95 & Windows NT Platforms. Generate billing reports & develop applications for medical firms using FoxPro for Windows 2.5 & SQL Server on Novell & Window NT Client/Server platforms. Systems development design & R&D on software products using project management tools & project life cycle methodologies. Min. reqs.: MS in Computer Science, 3 mos. @ carrying out those duties set forth in the job offered or 3 mos. in logical & physical design of GUI applications using a relational database engine, FoxPro, running under DOS/Windows. Past logical & physical design of a knowledge database using C & embedded SQL. Apply at the Texas Employment Commission, Dallas, Texas or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778. J.O. #TX7518668. Ad Paid by an Equal Opportunity Employer.

Computer Programmer - Analyst. Develop AS/400 based applications using AS/400 CL, AS/400 DDS & RPG/400 programming; develop integrated manufacturing applications such as BPCS, MAC/PAC & PRMS; use CRTPF, CRTLF, JOINS & OPNQRYF database techniques for database manipulation. M-F 40hrs, overtime varies; 8-5, $45,000/yr. $32.45 per hour overtime. Requirements - Bachelor of Science Degree in computer science, electrical engineering or industrial management engineering, one year's experience in the job offered or one year's experience as a computer systems analyst. Special requirements - one year's experience with AS/400 CL, AS/400 DDS & RPG/400 programming, CRTPF, CRTLF, JOINS & OPNQRYF database techniques. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume & cover letter to: Illinois Department of Employment Security, 401 S. State St. 3 South, Chicago, IL 60605. Att: Brenda Kelly. Ref. # V-IL 14387-K. No calls. An employer paid ad.

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- Supply Chain Management Applications with IDEAL/DATACOM, UNIX and EDI knowledge.
- Research and Development Applications with COBOL II, DB2/SQL, Visual Basic, Windows95, Internet development skills with Lotus Notes and UNIX a plus.
- Distribution and Order management Applications with CSP, DB2/SQL, ORACLE, COBOL II, JCL, PL/1, VSAM, Powerbuilder and HP-UNIX networking and scripting helpful. IDEAL/DATACOM a plus.

TELECOMMUNICATIONS ANALYST

Three to five years of experience with technical competence to install and administer telecommunications equipment and services. A thorough understanding of modems, multiplexors, cables, FEPs, SNA, routers and network management tools is required.

DESKTOP AND SERVER PROJECTS ANALYST

Two to five years of LAN Administration experience with technical competence to administer and install various PC AND LAN equipment. Knowledge of NOVELL 3.1x environments, DOS, Windows 3.1x required. Windows95 and knowledge of NT both on server and desktop a plus.

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Three years of experience on MVS/ESA HP-UNIX, AIX, DEC UNIX/OSF, Windows/NT, and Lotus Notes is required.

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PROGRAMMER ANALYST (Ref 16596) - plan, develop, test & document comp programs: apply knowledge of programming techniques & comp. systems, evaluate user request for new or modified program, determine feasibilities, cost & time required compatibility with current sys. & comp. capabilities, consult with user to identify current operating procedures & clarify program objectives, formulate plan outlining steps required to develop program using structured analysis & design, convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by comp., design, development, customization & implementation of Oracle Financials package using Accounts Payables, order entry, inventory, revenue accounting, Oracle General Ledger, Oracle Receivables, Oracle RDBMS (Ver. 6.0/7.0), PL/SQL, AOL, Forms 2.3, Pro*C, RPT Regs Bach. or Comp. Sci., Systems Analysis Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant or Analyst Programmer (Systems Officer). Will accept 3 yrs. of college ed. plus 3 yrs. exp. or the job offered or in a related occup. in lieu of the req'd ed & exp. Related exp. including design, development, customization & implementation of Oracle & Oracle Financials systems & using Oracle General Ledger, Oracle Receivables, Oracle RDBMS (Ver 6.0/7.0), PL/SQL, & AOL. $50,000/yr 40 hrs/wk., 8a-5p, M-F. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref # Employer Paid Ad.

Computer Software Consultancy Company requires Software Engineer Requirements Design and Development-Server architecture based on manufacturing, Financial and EDI applications, coding in SYBASE, APT and SQR, writing UNIX and UNIX Utility scripts for maintaining CMVC and interfacing with mainframes using OMNI Netgateway. Experience developing MRPII applications and performance tuning and database administration like creating SYBASE Servers and Databases. Also must have working knowledge of OMNI Netgateway, CMVC and EDI. Two years experience as a Software Engineer or in the related occupation as Programmer/Analyst, a Bachelor's Degree in Engineering and must have minimum one and one half years experience with UNIX and UNIX Utilities Scripts, Relational databases (RDBMS), SYBASE, APT, Database Administration and Performance Tuning. Travel required. 40 hrs/wk, 8.00 A.M. to 5.00 P.M. Salary $37,700/yr. Send Resumes with social security numbers to Indiana Department of Workforce Development, 10 N. Senate Ave, Indianapolis, IN 46204-2277. Attn: Gene R Replogle. Refer to ID # 3379635

Sr Systems Engineer - Analyze and design distribution mgmnt. system in a client-server environment using ORACLE and utilities: Forms, Reports/ReportWriter SQL*Plus, and CASE tools. Prepare program specs. and systems docs. Enhance/debug & test existing systems and programs. 40 hrs./wk, $72,000/yr. Req. 2 yrs experience, which includes 6 months exp. using ORACLE 7, and Bach. in Comp. Sci., Math, any Engineering field. Employer Paid Ad. Send resumes to 7310 Woodward Avenue Room 415, Detroit, Michigan 48202 Reference No. 24796.

Cad Cam Systems Designer for design of automated analysis systems firm. Duties include: Design of software relating to & facilitating mechanical design, including, analysis of existing design process, recommendation of change to the process, development of specifications for software needed to implement process change, writing of software (using AutoLISP, FORTRAN, Visual Basic, ADS, (UA/CATGEO) required for process change. Integration of engineering CAD data into manufacturing process including, development of automatic Bill of Material, development of translation tools for use in downloading solid models from engineering to CNC machines. Development of format for engineering CAD files including database structure support and tracking of revision levels. Requires a Masters Degree in Industrial Engineering or Computer Science focusing in Computer Aided Design and Manufacturing, as evidenced by advanced coursework, thesis, or project: Database System, Management Information Systems, CAD-CAM Systems, CNC Machine. Requires one year experience in the job offered or one year experience as a Research Assistant or in Software Development to include design and development of comprehensive database, experience can be obtained as part of academic training or subsequent to it. Salary is $40,636.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415, Detroit, MI 48202 Ref. #298-96 Employer paid ad.

Computer Programmer - Analyst: Develop AS/400 based applications using AS/400 CL, AS/400 DDS & RPG/400 programming; develop integrated manufacturing applications such as BPCS, MAC/PAC & PRMS use CRTPF, CRTLF, JOINS & OPNQRYF database techniques for database manipulation. M-F, 40hrs, overtime varies, 8-5, $56,000/yr; $39.66 per hour overtime. Requirements - Bachelor of Science Degree in computer science, electrical engineering, or industrial management engineering, two years experience in the job offered or two year's experience as a computer systems-analyst. Special requirements - two years experience with: AS/400 CL, AS/400 DDS & RPG/400 programming, CRTPF, CRTLF, JOINS & OPNQRYF database techniques. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume & cover letter to: Illinois Department of Employment Security 401 S. State St. 3 South Chicago, IL 60605. Att: Brenda Kelly. Ref # V-IL 14368-K. No calls. An employer paid ad.

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SOFTWARE ENGINEER required. Design & develop GUI's using OSF/Motif, Xlintrinsics & X-lib. Design of connectivity solutions & systems architecture on UNIX platforms using expertise with client/server technology, TCP/IP & UDP/IP Communication protocols, SSO sockets, distributed processing, UNIX Shell programming & C/C++. Implement clustering algorithms & mathematical models. Master's degree or its equivalent required in Computers or Engineering, plus 1 year experience in the job duties described above. University work experiences (other than mere classroom study) may be used to satisfy the experience requirements. Must have proof of legal authority to work in the U.S. Salary - $38,000/year for a 40 hour work week. Apply at the Texas Employment Commission, Fort Worth, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778-0001. J.O. Number TX7505258. Ad paid by an Equal Opportunity Employer.

SOFTWARE ENGINEER required. Design & development using Object-Oriented methods & coding & testing of real-time systems using C++ on both UNIX & Windows platforms. Database programming in SQL on RDBMS & OODBMS. GUI programming using Visual C++ & network programming using TCP/IP & UNIX System internals. Master's degree or its equivalent required in Math, Computers or Engineering, plus 1 year experience in the job duties described above. Must have prior experience with both Rumbaugh & Booch methodology. University work experiences (other than mere classroom study) may be used to satisfy the experience requirements. Must have proof of legal authority to work in the U.S. Salary - $39,000/year for a 40 hour work week. Apply at the Texas Employment Commission, Fort Worth, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778-0001. J.O. Number TX7505260. Ad paid by an Equal Opportunity Employer.

SYSTEMS SPECIALIST. Design and develop database programs for customized point of sales reports. Apply speaker independent isolated speech recognition algorithms employing a neural network approach to point of sales systems and applications. Salary, $41,610 per year 40 hour week (9:00 - 5:00) overtime as needed as a rate of $30.00 per hour. Requirements, Bachelor degree in Computer Science 2 years experience in related occupation as a Computer Engineer experience must include development of algorithms and computer programs for implementing neural network approach to speech recognition programs. Send resumes to 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Reference No. 18296. Employer paid ad.

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Requirements include a Master's Degree in Information Management or related area; minimum of 5 years of management experience in MIS, extensive knowledge of various systems, procedure analysis, programming and computer operations and excellent presentation skills.

We prefer an individual who has had experience in organizational reengineering and a proven track record of design, implementation, and installation of systems.

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If you feel that the above position is of interest to you and you meet the qualifications please send your resume to: **Kathryn Kuchwara, RN, BA, Placement Manager, Personnel/Organizational Development, Carlisle Hospital and Health Services, 246 Parker Street, PO Box 316, Carlisle, PA 17013-0316.** *EOE*

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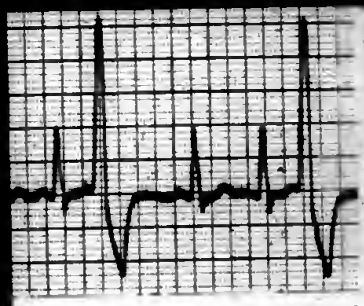

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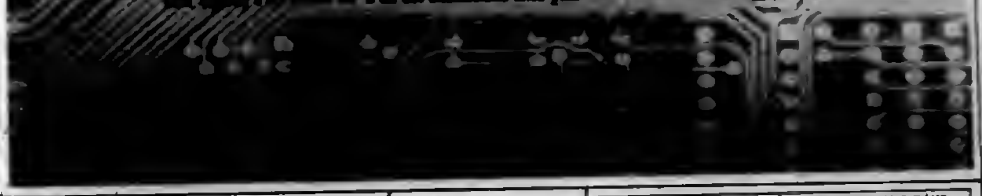

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Marketplace

Lower costs, higher acceptance spur optical storage market

By Lynn Haber

For a technology that has been around for more than a decade, optical storage seems like, well, a snoozer. Companies that require massive amounts of data storage have deployed optical storage options for years. But more mainstream deployment of the technology never caught hold. That is slowly changing.

As standards bodies address compatibility issues for next-generation products, optical storage is begining to look young again.

"There's much more acceptance of optical storage today because people don't see it as being scary anymore," says Linda Kempster, a storage media specialist at IIT Research Institute in Lanham, Md. Information systems managers don't fear the technology's complexity or question if it will work, she says.

Optical storage is used most often for dedicated imaging systems and data-intensive applications, such as systems for the collection of seismic data.

Networked imaging systems is a future growth area for the technology. LAN-based systems are expected to grow from 15% to 20% annually in the next four years, according to Stan Corker, director of removable storage research at International Data Corp. (IDC) in San Diego, Calif. The previous annual growth rate was just 10%.

The potential for cost savings is driving this growth. Yamakawa Manufacturing Corp. in Portland, Tenn., saved money by moving to optical storage in the form of computer output to laser disc (COLD).

Yamakawa, which manufactures automotive parts, has used optical discs for a COLD application since 1994. In 18 months, the company has saved more than $30,000, says Lurton Keel, IS manager at the firm. "We've definitely met our goal, and the savings in storage space is tremendous," he says. Yamakawa uses an IBM AS/400 and an IBM 3995 Imaging System.

Optical platters will still be used to archive data, but CD-ROMs have found a home in data distribution. Scott McCready, a principal at IDC/Avante in Framingham, Mass., says as organizations become more network-sensitive, removable CDs will make more sense for organizations that have general data distribution needs. CD-ROM drives are much less expensive than 5 ¼-in. magneto-optical drives: It costs $250 for CD-ROM drives and $2,000 for magneto-optical drives.

McCready says optical discs are best for central storage for organizations that don't distribute their data. And one of the most popular optical discs, the 5 ¼-in. media, is expected to grow from 1.3G bytes to 2.6G bytes.

> "People don't see it as scary anymore."
>
> **Linda Kempster**
> *Storage media specialist*

Kempster says the 5¼-in. technology suits workgroup or departmental applications, but she doesn't expect it to take over the optical world or displace 12- and 14-in. optical storage options.

Kempster says she expects to see 60G-byte platters by 2000. Some vendors are shipping 15G-byte platters; others expect to introduce 25G-byte, 12-in. platters by summer.

Connecticut Mutual Life Insurance Co. in Hartford will upgrade from 7G-byte to 12G-byte optical discs. Joe Bilski, senior operating systems consultant at the insurer, says the firm uses 12-in. write-once read-many technology. Making the switch "will allow us to upgrade to a smaller jukebox and be able to house more data on the larger platters," he says.

Kempster says incompatibilities in vendors' optical products are gone. She says organizations that shun optical storage because of a lack of standards just don't want to invest in the technology. "The key to this business is finding a vendor who will stick by you and solve any problem that you may have," she says. "The media will work, the system will work." ■

Haber is a freelance writer in Norwell, Mass.

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INDEX

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Computer Products (800) 727-7733 pg 103
Spectra Equipment (800) 745-1233 pg 102

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Alicomp (800) 274-5556 pg 102
AM Quest, Inc. (404) 264-5770 pg 102
Faneuil Systems (708) 574-3636 pg 102

Network Management
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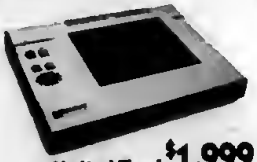

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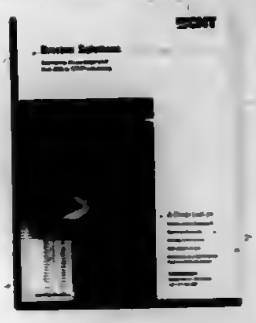

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Compuware 10, 26-27
http://www.compuware.com
Cybernetics 13
Digital Equipment Corp. 29, 40/41*
http://www.digital.com
Expocon Management Group 24
FTP Software C3
http://www.ftp.com
Hewlett-Packard 42, 43
http://www.hp.com
IBM 3
http://www.ibm.com
International Data Corp. 33
Information Builders 47, 49
http://www.ibi.com
Innovation Data Processing 7
Lawson Software 53
http://www.lawson.com
Lotus Development Corp. 64
http://www.lotus.com
McAfee 22-23
Micro Focus 11
http://www.mfltd.com.uk
(800)872-6265
Microsoft 34-35, 60-61
http://www.microsoft.com
NEC Technologies 50-51
NetManage 108
http://www.netmanage.com
Netscape 62
http://www.home.netscape.com
Nokia Display Products 39
www.sjmercury.com/advert/nokia
(800)BYNOKIA
Open Text 21
Oracle Corp. 5
http://www.oracle.com
Platinum Technology 68
http://www.platinum.com
Racal Datacom 25
Retail Systems '96 48
SAS Institute 30-31
http://www.sas.com
SCO 44
http://www.sco.com
Seer Technology 112, C4
Softbank 59
Software Development 41
Softworks 71
Sun Microsystems 17, 54, 75
http://www.sun.com
Texas Instruments 66-67
TGV 15
Unisys
http://www.unisys.com 38
(800)874-8647 X100
Workstation Group 48

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Investing on a wing and a prayer

By Kim S. Nash

What is it about Internet companies that drives investors to hyperactive, sometimes nonsensical stock buying?

To many on Wall Street, Netscape Communications Corp. (NASDAQ:NSCP) is the Internet. As long as investors are high on cyberfumes, Netscape's share prices will soar like Icarus.

"The stock's valued greater than Delta Air Lines," one Wall Street analyst says.

But sooner or later, Wall Street will look for profits proportionate to Internet firms' huge market valuations. When it doesn't find them, 'net stocks will fall back to earth. And the drop may have already begun. In February, the stocks of several 'net access providers were down sharply. Analysts speculated that investors were starting to focus on the bottom line rather than on revenue growth.

Such prospects are scaring some investors away. Bapcha Ramamurthy, an amateur investor and technology stock aficionado, refuses to buy Internet stocks because picking such stocks is "worse than throwing darts at a board; it's like throwing darts at a land mine," he says.

Yet some analysts maintain that investing in the Internet makes sense as long as you keep your perspective. "Despite the frenzy, ['net stocks are] a sound investment — as long as it's a selective investment for the long term in the leading companies," says Jim Breyer, managing partner at Accel Partners, a venture capital firm in San Francisco.

Eliza Pescione

Look before you leap

If bungee jumping is your idea of fun, then you're a good candidate for investing in Internet stocks. Before you leap, however, consider this advice from analysts and investors:

- Choose companies with big-name backers. UUNet Technologies, Inc. (NASDAQ:UUNT), an Internet service provider in Fairfax, Va., is 25% owned by Microsoft Corp. That backing doesn't mean UUNet is 100% safe, but it does instill confidence in the company's prospects.
- Identify Internet trouble zones, and invest in the companies that can ease them. As an information systems manager, you've got a bird's-eye view of where your Web projects get bogged down. Vendors that caulk those seams — for example, by connecting Web applications to legacy systems or providing programmable agents to help users find Internet data — look promising. North Andover, Mass.-based FTP Software, Inc. (NASDAQ:FTPS), while not a pure Internet play, is worth a look.
- Look for plays based on up-and-coming technology such as the Java Web programming language from Sun Microsystems, Inc. (NASDAQ:SUNW).

"Anyone who invests a nickel in a company without a Java solution is wasting good money," says Rick Bennett, an amateur technology stock-watcher and part-time advertising executive in Sandy, Utah. (Bennett doesn't do any marketing for Sun or Java-related companies.)

- Scout for companies that don't necessarily sell directly to Internet users but provide key technology pieces just the same.

For example, Spyglass, Inc. (NASDAQ:SPYG) in Naperville, Ill., licenses its Web servers and browsers to other firms for resale. CompuServe, Inc., Digital Equipment Corp. (NYSE:DEC), Microsoft (NASDAQ:MSFT) and Oracle Corp. (NASDAQ:ORCL) all are Spyglass customers.

- Brace yourself. You must be willing to face short-term losses to make any money at this high-risk game.

—Kim S. Nash

For the wired investor

■ Investools (http://investools.com) is a Web site for "self-reliant investors" who want to forgo the expensive advice of professional money managers. Registration is free, but information isn't. Prices range from 25 cents to hundreds of dollars for suggestions, research and articles about public companies from 21 publications. A handy section called Marketplace supplies information on brokers and other financial professionals.

■ The Securities and Exchange Commission (SEC) offers the Edgar Database of Corporate Info (http://www.edgar-online.com). Want to find out who is the biggest shareholder in a given company? How much executives are paid? The Edgar database has the answers. Included are copies of the latest corporate filings, such as 10Q, 10K and other mandatory financial forms. Prices range from $9.95 to $99.95 per month, depending on the type of data requested.

■ PC Quote, Inc. (http://www.pcquote.com) service provides stock prices, free of charge, on a 20-minute delay. However, if you pay a minimum of $23, you can get real-time quotes. When we visited, the site was extremely slow.

■ Individual, Inc. (http://www.newspage.com) supplies real-time stock market news about 40 public companies. The firm recently filed with the SEC for an initial public offering.

■ Usenet discussion (misc.invest.stocks) is a lively — sometimes frantic — discussion of market activity. Look for pithy and frequently right-on commentary from Bapcha Ramamurthy, who has become a celebrity in the newsgroup.

■ Computerworld's Technology Investment Center (http://www.computerworld.com/techcity/tech_inv/tech_inv.html) offers a ticker on 200 technology stocks, a compendium of top gainers and losers, some analysis and links to several other stock-related sites. *—Kim S. Nash*

Stock Ticker March 1, 1996

Gainers / Losers

PERCENT

Gainers		Losers	
Systemsoft Corp.	23.8	LSI Logic Corp.	-32.1
SQA Inc. (H)	22.5	Xilinx	-28.9
Intelligent Info. Systems	21.9	Spyglass Inc.	-20.3
Merisel (L)	18.4	Bay Networks Inc.	-24.2
Magic Software Enterprises (H)	16.3	[illegible]	-13.5
Centigram Communications	15.9	Intuit Inc.	-22.0
Network Computing Devices	14.6	UUNET Tech.	-20.1
EMC Corp.	14.5	Compaq Computer Corp.	-18.8

DOLLAR

Gainers		Losers	
SQA Inc. (H)	5.00	Intuit Inc.	-14.12
Business Objects	4.75	Xilinx	-12.88
Analysts Int'l (H)	4.38	LSI Logic Corp.	-12.00
Centigram Communications	2.88	Bay Networks Inc.	-11.50
Newbridge Networks Corp.	2.88	Compaq Computer Corp.	-9.75
Cray Research Inc.	2.75	America On-Line (H)	-9.75
EMC Corp.	2.75	Netscape Comm. Corp.	-8.50
Systemsoft Corp.	2.69	Spyglass Inc.	-8.13

Industry Almanac

Network stocks boom

Growth of the Internet and the need for networks to be upgraded to handle higher-speed communications are creating a boom in the networking sector.

Investors who seek promising networking stocks need only trace these trends to the companies best positioned to profit from them, says Gina Sockolow, a networking analyst at First Albany Corp. in New York.

Sockolow's picks include **Bay Networks, Inc. (NASDAQ:BNET)**, which has strong switching products; **NetStar, Inc. (NASDAQ:NTSR)**, which plans to offer an Internet-capable router; and **Sun Microsystems, Inc. (NASDAQ:SUNW)**, which will benefit from selling servers and security software to Internet service providers who need to upgrade their hardware. Sockolow also picks **Whittaker Corp. (NYSE:WKR)**, which is offering a fourth-generation product that integrates hub, router and switching functions in one box.

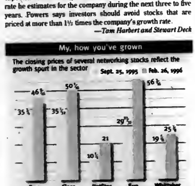
David Powers, an equity analyst at Edward Jones in St. Louis, warns investors to steer clear of small niche companies that sell at very high valuations. He says he prefers to stick with large companies that have broad product lines and an overseas presence and that sell at "reasonable valuations."

For example, he says he likes **Cisco Systems, Inc. (NASDAQ:CSCO)**, whose stock is selling at about 35 times its expected 1996 earnings. That roughly equals the 33% growth rate he estimates for the company during the next three to five years. Powers says investors should avoid stocks that are priced at more than 1½ times the company's growth rate.

—Tam Harbert and Stewart Deck

My, how you've grown

The closing prices of several networking stocks reflect the growth spurt in the sector



Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
COMS	33.43	25.75	3COM Corp	45.63	-3.63	-7.4
AIT	66.88	40.75	Ameritech Corp.	57.88	-2.13	-3.3
AXE	22.13	16.63	Anixter Intl.	18.63	-0.75	-3.3
APTS	35.00	2.75	Apertus Tech.	4.25	0.75	6.3
T	68.88	67.88	AT T	62.88	-3.33	-4.7
ASND	47.75	6.88	Ascend Communications (H)	42.25	-3.63	-7.9
BNYN	19.63	6.88	Banyan Systems Inc.	8.00	-0.44	-5.2
BAY	30.00	30.63	Bay Networks Inc.	36.00	-11.30	-24.2
BEL	80.38	30.75	Bell Atlantic Corp	63.63	-3.75	-2.6
BLS	45.88	28.25	Bellsouth Corp	38.38	-3.00	-2.5
BBN	44.75	15.88	Bolt, Beranek and Newman	33.75	0.75	2.3
BRKT	75.75	9.13	Brooktrout Technology (H)	24.00	1.50	6.7
CS	87.75	38.00	Cabletron Systems	71.25	-4.50	-5.9
CSCC	75.13	20.38	Cascade Communications (H)	67.00	5.33	-7.4
CGRM	25.13	12.75	Centigram Communications	21.00	2.88	15.9
CSCO	51.00	16.30	Cisco Systems Inc. (H)	45.13	-3.69	-7.6
CLIX	11.38	0.00	Compression Labs Inc.	7.13	-0.06	-0.9
CMNT	12.75	4.00	Computer Network Tech	5.00	0.75	5.3
XCOM	14.50	8.75	CrossComm	10.13	-0.38	-3.6
DIGI	44.00	21.88	DSC Communications	29.38	-1.81	-5.8
FORE	70.25	25.50	FORE Systems Inc. (H)	42.75	-4.30	-6.7
GDC	21.88	9.23	General Datacomm Indus	11.75	-0.13	-1.3
GSX	42.50	30.00	General Signal Networks	30.63	-0.63	-1.7
GTE	44.25	31.88	GTE Corp	42.88	-0.75	-1.7
MCIC	31.00	19.09	MCI Communications Corp.	75.13	-0.25	-0.9
MICM	12.30	3.50	MICOM Communications Corp.	8.38	0.38	4.7
MNPI	31.50	9.13	Microcom Inc. (H)	28.13	-0.88	-3.0
NETM	34.00	30.00	NetManage Inc.	11.88	0.13	1.1
NTRX	8.75	3.63	Netrix Corp	4.00	-0.38	-8.6
NCDI	12.00	6.98	Network Computing Devices	8.88	0.88	14.6
NWK	42.00	19.75	Network Equipment Tech.	75.00	-1.50	-4.9
NETG	44.30	22.75	Netware General	39.00	-0.75	-1.9
NN	53.75	25.00	Newbridge Networks Corp	51.00	2.88	6.0
NT	50.88	31.50	Northern Telecom Ltd.	47.25	-1.25	-2.4
NOVL	23.75	11.88	Novell Inc.	11.88	-0.75	-5.9
HYN	59.75	38.00	Hyrex Corp	51.00	-1.75	-2.4
OCTL	42.63	19.00	Octel Communications Corp.	38.38	0.75	0.7
ODSI	43.25	13.13	Optical Data Systems Inc.	25.75	-2.25	-8.0
PCTL	44.72	13.38	Picturetel Corp. (H)	34.63	-7.13	-17.1
PTON	10.75	5.30	Proteon Inc.	5.63	-0.50	-8.2
RACO	7.88	6.25	Racotek Inc.	4.94	0.19	3.9
RETX	5.30	1.81	Retix	4.13	-0.13	-2.9
SFA	24.88	11.38	Scientific Atlanta Inc.	16.50	-0.50	-2.9
SHVA	88.30	27.00	Shiva Corp. (H)	80.75	-2.00	-2.6
SBC	60.75	39.63	Southwestern Bell Corp	53.88	-2.30	-4.4
FON	45.50	27.75	Sprint Corp.	42.30	-1.63	-3.7
SMSC	26.30	12.50	Standard Microsystems Corp	15.25	-1.25	-7.6
STRM	44.50	16.00	Stratacom Inc. (H)	39.13	-2.63	-6.3
TBIT	8.63	2.38	Telebit Corp.	4.63	-0.44	-8.6
USRX	124.25	26.13	US Robotics (H)	117.25	0.00	0.0
USW	48.38	75.38	US West Inc.	33.13	-0.88	-2.6
XIRC	17.00	8.88	Xircom	30.75	0.25	2.4

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
AALR	9.63	4.13	Advanced Logic Research	7.50	-0.75	-9.1
AAPL	50.13	26.69	Apple Computer Inc.	26.69	-3.13	-10.5
ASTA	19.13	6.50	AST Research Inc. (L)	6.30	-0.50	-7.1
CPQ	38.75	31.13	Compaq Computer Corp	42.00	-9.75	-18.8
DELL	49.38	19.88	Dell Computer Corp	30.63	-4.13	-11.9
GATE	37.30	16.00	Gateway 2000 Inc.	75.75	-4.50	-14.9
HWP	104.13	57.38	Hewlett Packard Co. (H)	94.63	-6.25	-6.2
MUEI	75.88	9.25	Micron International Inc.	10.38	-2.13	-17.0
NIPNY	75.13	47.25	NEC America	38.88	-0.63	-3.1
SGI	45.63	21.13	Silicon Graphics	24.00	-2.75	-10.3
SUNW	57.13	15.00	Sun Microsystems Inc. (H)	49.00	-4.30	-8.4

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
AMH	13.63	4.75	Amdahl Corp	8.75	0.19	2.2
CYR	75.25	16.63	Cray Research Inc.	28.25	2.75	10.8
DGN	19.13	6.75	Data General Corp	15.88	-1.00	-5.9
DEC	76.50	31.30	Digital Equipment Corp	44.13	-7.25	-9.9
IBM	128.88	75.13	IBM (H)	119.75	-6.25	-5.0
MDCD	13.00	3.00	Meridian Data Inc	11.50	-0.75	-6.1
NETF	7.75	4.25	NetFrame	5.00	-0.31	-5.9
SQNT	25.38	11.75	Sequent Computer Sys.	11.30	-0.50	-4.7
SEQS	10.00	3.63	Sequoia Systems Inc.	3.89	-0.30	-11.4
SRA	36.13	23.00	Stratus Computer Inc	28.89	0.00	0.0
TDM	17.75	9.75	Tandem Computers Inc.	9.63	-0.38	-3.8
TRCD	5.75	2.00	TriCord Systems	3.94	0.19	5.0
UIS	13.63	5.30	Unisys Corp	8.00	-0.63	-8.4

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
ADBE	74.75	30.00	Adobe Systems Inc	31.13	-3.88	10.5
ANSWA	8.75	2.94	American Software Inc	4.00	-0.31	-7.2
APLX	41.75	8.25	Applix Inc (H)	38.88	2.38	6.5
ARSW	44.50	38.75	Arbor Software	42.88	-1.38	-3.3
ACAD	53.00	27.75	Autodesk Inc.	35.31	-1.56	-4.2
BACH	11.88	3.75	Bachman Info Systems	10.75	-0.13	-1.1
BGSS	42.00	26.00	BGS Systems Inc	35.25	0.00	0.0
BMCS	38.00	27.63	BMC Software Inc	52.13	-1.63	-3.0
BOOL	26.38	18.25	Boole and Babbage	23.75	-0.30	-2.3
BORL	21.75	7.13	Borland Int'l Inc. (H)	19.00	-1.38	-6.7
BOBTY	76.50	20.75	Business Objects	73.25	4.75	6.9
CESH	3.94	1.38	CE Software	2.83	-0.44	-13.3
CYE	27.88	12.38	Cheyenne Software Inc	23.13	-0.42	-2.6
COGNF	32.30	30.75	Cognos Inc. (H)	30.00	0.25	0.5
CA	76.30	37.00	Computer Associates (H)	87.25	-5.63	-7.7
CVN	15.50	4.63	Computervision Corp	10.38	-0.75	-6.7
CPWR	38.00	13.30	Compuware Corp	22.75	-0.06	-0.3
CSRE	27.75	9.88	Comshare Inc.	22.00	0.25	3.1
COSFF	19.30	9.38	Corel Corp	10.13	-0.88	-8.0
DWTI	16.25	6.23	Dataware Technologies Inc	7.25	-0.30	-6.5
DSLGF	32.75	9.75	Discreet Logic Inc	14.88	0.88	6.3
FILE	67.00	30.00	FileNet Corp (H)	63.25	-0.25	-0.4
DDDOF	8.25	3.38	4th Dimension	6.63	0.75	12.8
FTPS	40.63	10.38	FTP Software Inc	13.63	0.38	2.8
GSOF	26.00	7.50	Group 1 Software	7.50	0.00	0.0
GPTA	12.25	4.88	Gupta	6.00	0.50	9.1
HOGN	13.88	5.50	Hogan Systems Inc.	12.38	0.30	4.2
HYSW	28.38	34.00	Hyperion Software Corp	20.00	0.88	4.6
IRIC	18.63	10.00	Information Resources	14.25	-0.88	-5.8
IFMX	36.75	16.63	Informix Corp (H)	34.13	1.69	5.2
INGR	20.13	10.00	Intergraph Corp.	38.31	-0.19	-1.0
LEAF	12.63	4.25	Interleaf Inc.	9.63	0.00	0.0
ISLI	26.75	8.75	Intersolv Inc.	12.50	-0.38	-2.9
INTU	89.75	75.63	Intuit Inc.	50.13	14.12	-22.0
LGWX	19.50	19.88	Logic Works	17.88	1.38	8.3
MGICF	13.38	3.63	Magic Software Enterprises (H)	13.38	3.88	36.3
MANU	20.50	9.50	Manugistics Group Inc	13.00	0.00	0.0
MAPS	40.00	10.00	MapInfo Corp	12.88	-0.25	-2.0
MATH	7.38	2.75	MathSoft	6.75	0.50	8.0
MCAF	59.75	13.25	McAfee Associates (H)	52.30	-3.75	-6.7
MENT	22.88	10.88	Mentor Graphics	14.38	0.50	3.6
MIFGY	12.88	8.25	Micro Focus	9.25	-0.33	-1.3
MGXI	15.13	5.75	Micrografx Inc.	11.75	0.63	4.8
MSFT	109.23	62.75	Microsoft Corp	95.00	7.30	-7.3
ORCL	55.00	28.00	Oracle Corp (H)	49.38	3.38	-0.4

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
PMTC	38.25	17.00	Parametric Technology (H)	34.88	-2.75	-7.3
PARQ	17.30	6.63	ParcPlace Systems Inc.	8.75	-0.75	-7.8
PSFT	57.75	16.75	Peoplesoft (H)	53.25	-2.00	-3.8
PTEC	16.13	6.13	Phoenix Technologies	13.25	-0.38	-2.8
PSQL	16.88	3.13	Platinum Software	5.88	-0.25	-4.1
PLAT	26.00	11.25	Platinum Technology	13.38	-0.25	-1.8
PRGS	36.00	19.30	Progress Software Corp.	22.75	0.44	2.0
RNBO	28.75	15.13	Rainbow Technologies Inc.	21.88	-1.13	-4.9
ROSS	7.75	2.19	Ross Systems	2.50	-0.06	-2.4
SCOC	33.00	3.30	SCO Inc.	7.13	0.13	1.8
SDTI	87.50	12.00	Security Dynamics Tech. (H)	58.00	-7.75	-13.8
SKEY	53.75	13.38	Softkey International Inc.	22.13	-3.50	-13.7
SPCO	5.13	2.19	Software Publishing Corp.	3.00	0.00	0.0
SQAX	27.75	16.00	SQA Inc. (H)	27.25	5.00	22.5
SOTA	14.88	6.63	State of the Art (H)	12.69	-0.69	-5.1
SSW	70.30	32.88	Sterling Software Inc. (H)	65.38	0.50	0.8
SDRC	32.30	7.00	Struct. Dynamics Research (H)	29.50	-1.75	-4.3
SYBS	45.75	19.88	Sybase Inc.	29.81	-4.88	-14.3
SYMC	33.25	9.88	Symantec Corp.	12.75	-0.63	-4.7
SNPS	38.30	23.00	SynOpsys	33.31	-0.69	-2.0
SSAX	30.63	12.63	System Software Assoc.	29.75	-2.63	-11.2
SYSF	18.13	7.75	Systemsoft Corp.	14.00	2.69	23.8
TRUV	10.13	3.88	Truevision Corp.	8.00	0.50	9.1
VIEW	15.12	6.38	Viewlogic Systems	10.63	0.25	2.4
VMRK	21.30	5.75	VMark Software Inc.	8.13	0.13	1.6
WALK	31.13	4.63	Walker Interactive Systems	10.00	-0.25	-2.4
WALL	55.30	33.00	Wall Data Inc.	15.13	-0.13	-0.8
WANG	24.63	31.33	Wang Laboratories Inc. (H)	22.25	0.38	1.7

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
AMER	37.00	16.75	America On-Line (H)	46.73	-9.75	-17.3
NETC	91.30	19.00	Netcom On-Line	24.00	-4.63	-16.2
NSCP	87.00	22.88	Netscape Comm. Corp.	52.50	-8.30	-13.9
PSIX	29.00	8.75	PSINet	9.75	-3.00	-23.5
QDEK	39.30	3.38	Quarterdeck Corp	18.44	-0.31	-1.7
SPYG	61.00	13.25	Spyglass Inc.	75.00	-8.13	-20.3
UUNT	38.75	21.75	UUNET Tech.	29.75	-7.88	-20.1

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
AMD	38.25	16.11	Advanced Micro Devices	19.00	-1.38	-6.7
ADI	30.13	16.38	Analog Devices Inc (H)	25.38	-3.50	-12.1
CHPS	15.88	6.25	Chips and Technologies	8.75	-0.06	-0.7
CRUS	42.13	16.75	Cirrus Logic	29.13	-0.63	-3.2
CY	27.75	10.00	Cypress Semiconductor Corp	12.38	-1.13	-8.3
CYRX	40.75	18.25	Cyrix	27.50	-3.50	-13.9
INTC	78.38	39.25	Intel Corp.	56.25	-4.75	-7.0
LSI	42.30	22.50	LSI Logic Corp	25.38	-12.00	-32.1
LSCC	63.00	23.00	Lattice Semiconductor	30.50	-4.75	-13.5
MCRL	32.30	12.30	Micrel Semiconductor Inc.	14.50	-1.00	-6.5
MU	94.75	29.75	Micron Technology	31.38	-6.75	-17.7
MOT	82.30	44.75	Motorola Inc.	12.63	-5.50	-9.5
NSM	33.63	18.88	National Semiconductor	15.00	-2.38	-13.7
SERA	28.75	9.75	Sierra Semiconductor	22.63	2.65	13.1
TXN	83.75	38.25	Texas Instruments	40.13	-4.25	-8.0
VLSI	30.13	11.63	VLSI Technology (L)	12.00	0.19	1.6
WWTK	6.88	3.00	Weitek	2.69	0.31	13.2
WDC	22.13	13.13	Western Digital Corp.	20.00	0.63	3.2
XLNX	55.30	20.75	Xilinx	31.75	-12.88	-28.9
ZLG	54.13	20.30	Zilog Inc.	32.50	-5.88	-15.3

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
APCC	25.88	7.88	American Power Conversion	10.63	0.00	0.0
ADPT	38.30	29.25	Adaptec Inc. (H)	50.25	-0.13	-0.2
CBEX	13.13	3.50	Camber Corp.	6.25	0.00	0.0
CGN	7.25	2.25	Cognitronics Corp	5.39	0.38	13.2
CREAF	14.13	5.88	Creative Technologies Inc.	7.63	-0.31	-3.9
RACE	13.13	3.63	Data Race Inc	4.75	0.38	8.6
DTM	9.38	4.13	Dataram Corp. (L)	4.50	0.06	1.4
EMC	27.38	13.00	EMC Corp.	75.75	2.75	34.5
EMLX	28.30	6.38	Emulex Corp	30.38	-0.30	-4.6
ESCC	25.25	12.30	Evans and Sutherland	23.25	2.00	9.4
EXBT	19.12	10.00	Exabyte	14.75	1.00	7.3
ISLF	4.75	1.30	Intelligent Info Systems	2.44	0.44	21.9
IOMG	30.00	2.13	Iomega Corp (H)	17.50	2.13	13.8
IPLSA	7.88	2.30	IPL Systems Inc.	4.38	0.00	0.0
KMAG	37.30	12.30	Komag Inc.	29.13	-2.00	-6.4
MLIS	7.50	2.44	Micropolis Corp	2.38	-0.31	-10.9
MTSI	37.75	13.25	Micro Touch Systems Inc	13.63	-0.38	-2.3
PEAK	34.75	16.75	Peak Technology Group	23.75	1.50	6.2
PNCL	19.75	5.00	Pinnacle Micro Inc	9.00	0.88	10.0
PTNX	38.75	13.30	Printronix Inc.	19.75	1.50	8.2
AQM	7.75	3.75	QMS Inc.	5.13	0.38	7.9
QNTM	20.30	13.75	Quantum Corp	16.75	-0.19	-1.1
RDUS	14.13	1.38	Radius Inc (L)	1.44	0.13	9.5
SEG	42.25	24.00	Seagate Technology (H)	61.13	-5.38	-8.3
STK	31.75	17.88	Storage Technology (H)	75.63	0.75	2.6
TEK	61.88	31.38	Tektronix Inc.	44.50	-2.38	-5.1
XRX	144.63	108.38	Xerox Corp.	330.13	-0.75	-0.2

Exch	52-Week Range			Mar. 1 3 pm	Wk Net Change	Wk Pct Change
AMSY	24.63	11.38	American Mgmt. Systems	24.63	0.63	2.6
ANLY	38.00	20.25	Analysts Int'l (H)	38.00	4.38	13.8
AUD	43.38	30.25	Auto Data Processing	38.50	-1.75	-4.3
CATP	61.00	27.75	Cambridge Tech. Partners	30.75	-0.30	-1.0
CEN	47.50	30.38	Ceridian Corp.	42.88	-3.00	-6.5
CDO	23.75	30.38	Comdisco Inc.	21.13	-0.25	-1.2
CHRZ	33.50	6.63	Computer Horizons	29.50	-1.25	-4.3
CSC	80.75	46.50	Computer Sciences	72.13	-5.38	-6.9
TSK	22.00	9.50	Computer Task Group	18.63	0.63	3.5
CPU	44.38	37.30	CompUSA Inc.	38.13	-0.88	-2.2
CDA1	22.30	6.50	Control Data Systems Inc. (H)	21.25	1.38	6.9
EGGS	34.75	5.00	Egghead Discount Software	5.88	0.25	4.4
GME	57.63	38.00	General Motors E (EDS) (H)	56.25	-0.50	-0.9
INAC	18.30	7.88	Inacom Corp (H)	17.88	1.13	6.7
INEL	24.42	3.50	Intelligent Electronics	6.63	0.38	6.0
KEA	30.88	18.25	Keane Inc.	88.25	1.88	7.1
MSEL	8.38	2.75	Merisel (L)	2.81	0.44	18.4
MICA	15.00	7.25	Microage Inc.	9.88	0.25	2.6
PAYX	58.75	26.38	Paychex (H)	54.25	-3.00	-5.2
PMS	54.25	42.63	Policy Management Sys.	50.75	-1.38	-2.6
REY	38.63	25.88	Reynolds and Reynolds	38.00	-0.75	-3.9
SEIC	24.30	17.75	SEI Corp	22.50	-0.50	-2.2
SMED	58.00	32.00	Shared Medical Systems	55.38	1.19	2.2
SSPE	26.50	14.88	Software Spectrum Inc.	19.25	0.30	3.7
SNDT	35.75	20.38	Sungard Data Systems	35.00	0.00	0.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at http://www.computerworld.com.

3-D Systems ... 4
3Com Corp ... 6,20
Aberdeen Group, Inc. ... 45
Acom Computer Group PLC ... 15
Addonics Technologies Corp. ... 61
Adobe Systems, Inc. ... 1
Advanced Manufacturing Research Corp. ... 32
Advanced Micro Devices, Inc. ... 32
Aetna Life and Casualty Co. ... 1
Affiliated Computer Services, Inc. ... 71
AIWA America, Inc. ... 41
Alamo Rent A Car, Inc. ... 39
Allen Systems Group, Inc. ... 46
America Online, Inc. ... 1
American President Lines Ltd. ... 10
Amerisure Co ... 72
Andatac ... 6
Apple Computer, Inc. ... 8,52
Ans Corp. ... 82
Armon Networking Ltd. ... 8
Aspect Development, Inc. ... 32
Associated Grocers, Inc. ... 16
AT&T Corp. ... 1,82
Aura System ... 4
Baan Co. ... 14,32
Balboa Software ... 67
Bankers Trust New York Corp. ... 8
Bay Networks, Inc. ... 6,8,106
BBN Corp. ... 64
BMC Software, Inc. ... 45
Boeing ... 82
Booz Allen & Hamilton, Inc. ... 15
Borland International, Inc. ... 45,52
BT ... 1
Burlington Coat Factory, Inc. ... 1
Cabletron Systems, Inc. ... 6
CACI International, Inc. ... 58
Caldera, Inc. ... 48
California Pizza Kitchens ... 69
CAP Index ... 4
Cascade Communications Corp. ... 58
Caterpillar, Inc. ... 79
CE Software, Inc. ... 67
Cementos Mexicanos ... 72
Central Lousiana Electric Co. ... 71
CIMI Group, Inc. ... 1
Cisco Systems, Inc. ... 6,20,55,106
Citibank NA ... 1
Clark USA ... 45
Cognos Corp. ... 48
Colonial Savings ... 45
Compaq Computer Corp. ... 12,16,32,43,
CompuServe, Inc. ... 1,105
Connecticut Mutual Life Insurance Co. ... 12,28,100
Connectware, Inc. ... 79
ConsenSys Software Corp. ... 46
Convex Computer Corp. ... 32
CrossLand Mortgage Corp. ... 71
Cunid and Co. ... 43
Cyberplex Interactive Media, Inc. ... 66
CyberSafe Corp. ... 64
D & B Satyam Software ... 79
D. H. Brown and Associates ... 32,48
D. S. Data Storage, Inc. ... 6
Dataquest, Inc. ... 8
Dataware Technologies, Inc. ... 67
Dealer Internet Services Corp. ... 63
Dell Computer Corp. ... 16,39,43
DHL Worldwide Express ... 45
Digital Equipment Corp. ... 6,8,16,32,66,105
Disk/Trend, Inc. ... 12
DST Systems, Inc. ... 52
Dun & Bradstreet Software ... 45
Eagle Advanced Development Group ... 74
EMC Corp. ... 14,71
Entex Information Services, Inc. ... 71
Ernst & Young ... 65,109
Euclid Associates ... 82
Federal National Mortgage Association ... 71
Federated Department Stores, Inc. ... 8
Federated Systems Group ... 8
Fidelity Investments, Inc. ... 1,10
FileNet Corp. ... 45
First Albany Corp. ... 1,109
First Data Corp. ... 14
First Massachusetts Bank ... 71
Fleet Financial Group ... 71
FTF Financial Corp. ... 71
FTP Software, Inc. ... 105
Fulcrum Technologies, Inc. ... 66
Gale Research, Inc. ... 63
Gartner Group, Inc. ... 15,16,43,74
General Magic, Inc. ... 8
Gupta Corp. ... 45
Haht Software, Inc. ... 52
Harris Corp. ... 6
Hewlett-Packard Co. ... 6,7,12,16,20,43,45,48,55,66,70
Howmet-Cercast ... 24
I/Pro, Inc. ... 63
I2 Technologies, Inc. ... 32
IBM Credit Corp. ... 71
IBM PC Co. ... 16,39,43
IBM ... 1,6,8,10,12,15,32,39,41,43,46,48,52,55,65,70
IDC/Avante ... 74,100
Incite ... 58
Individual, Inc. ... 105
Infonautics ... 1
Informix Software, Inc. ... 1
Infosys Technologies Ltd. ... 79
Ingenius Corp. ... 14
Intel Corp. ... 8,16,39
International Data Corp. ... 1,6,12,14,24,39,48,55,66,79,100
International Technology Associates ... 4
Intuit, Inc. ... 14
Iomega Corp. ... 12
Iona Technologies Ltd. ... 6
Ipswitch, Inc. ... 67
Ives Development, Inc. ... 52
J. A. Riggs Tractor Co. ... 14
JBA International Ltd. ... 52
John Puttre & Associates ... 58
JRC International, Inc. ... 45
Kagan Telecom Associates ... 70
KPMG Peat Marwick ... 32
Lawson Software ... 14
LDDS WorldCom, Inc. ... 1
Lear Corp. ... 72
Lender's Service, Inc. ... 71
Liberty Travel, Inc. ... 72
Life Office Management Association ... 28
Lotus Development Corp. ... 1,24,45,52,71
Massachusetts Mutual Life Insurance Co. ... 28
MassMutual/The Blue Chip Co. ... 28
McAfee Associates, Inc. ... 6,46,55
McDonald's Corp. ... 6
MCI Communications Corp. ... 1,58
Metrolink's Executive Motif Libraries ... 48
Microsoft Corp. ... 1,6,8,12,15,24,41,43,45,46,48,52,65,66,67,69,105,109
Mips Technologies, Inc. ... 32
Montell North America, Inc. ... 45
Motorola, Inc. ... 55
National Computer Security Association ... 65
National Security Agency ... 64
National Semiconductor Corp. ... 8,45
NationWide Insurance Co. ... 28
NCR Corp. ... 71
NEC Electronics, Inc. ... 12
NEC Technologies, Inc. ... 12,16
Netcom Communications Corp. ... 1
Netscape Communications Corp. ... 10,43,45,52,65,67,105,109
NetStar, Inc. ... 106
Network Computing Devices, Inc. ... 8
New England Medical Center ... 69
New World Communications Group, Inc. ... 82
Nico Mak Computing, Inc. ... 46
Northern States Power ... 6
Northern Telecom, Inc. ... 12
Novell, Inc. ... 8,24,41,43,45,48,55,69,70
Object Management Group ... 6,12
Object Technology International, Inc. ... 12
Oki Telecom ... 70
Open Market, Inc. ... 7
Open Software Foundation ... 10
Optical Technology Group, Inc. ... 14
Oracle Corp. ... 8,15,32,45,70,71,105
Origin Technology, Inc. ... 32
Owens Corning Corp. ... 65
Pacific Bell ... 58
Packard Bell Electronics, Inc. ... 32
PageMart, Inc. ... 55
PaineWebber, Inc. ... 6,8
ParcPlace-Digitalk, Inc. ... 12
Pathfinder International, Inc. ... 45
PC Quote, Inc. ... 105
Pennzoil Co. ... 8
PeopleSoft, Inc. ... 14,45
Perfect Solutions, Inc. ... 79
Platinum Technology, Inc. ... 45,52
PMI Mortgage Insurance Co. ... 20,55
Point Communications Corp. ... 74
PostModern Computing Technologies, Inc. ... 6
PowerCerv Corp. ... 58
Prememos Corp ... 32
Principal Financial Group ... 12
Process Software Corp. ... 109
PSInet, Inc. ... 1
Richardson Electronics Ltd. ... 14
RJR Nabisco, Inc. ... 72
SAP AG ... 14,32,55,70,74
SAP America, Inc. ... 14
Satyam Computer Services Ltd. ... 79
Science Applications International Corp. ... 65
SCO, Inc. ... 48
SeaLand Service, Inc. ... 79
Sharp Electronics Corp. ... 16
Shawmut Bank ... 71
Siemens Nixdorf Informationssysteme AG ... 39
Silicon Graphics, Inc. ... 32
Software 2000, Inc. ... 8
Software Research, Inc. ... 52
Southwest Airlines ... 48
Spectrum Healthcare Services ... 82
Sprint Corp. ... 1
Spyglass, Inc. ... 105
Standard & Poor's Corp. ... 45
Storage Dimensions ... 41
Stream International, Inc. ... 8
Summit Strategies, Inc. ... 7,43,48
Sun Microsystems, Inc. ... 6,7,15,32,39,43,45,46,48,105,106
SunSoft, Inc. ... 8
Sybase, Inc. ... 1,45,70
Symantec Corp. ... 55
SynOptics Communications, Inc. ... 6
Tata Unisys Ltd. ... 79
TeamWare ... 24
Texas Instruments, Inc. ... 16,70
The ForeFront Group ... 67
The Signature Group ... 28
The Talent Network ... 65
The Tower Group ... 14
Tivoli Systems, Inc. ... 45
Transarc Corp. ... 10
U.S. Chambers of Commerce ... 74
Unison Software, Inc. ... 45
Unum Corp. ... 1
Upper Peninsula Telemedicine Network ... 69
Urban Decision System ... 4
US Air ... 39
US West Communications, Inc. ... 1,58,82
UUNet Technologies, Inc. ... 1,105
Vectra ... 79
Verifone India Private Ltd. ... 79
Verity, Inc. ... 66
Vertical Systems Group, Inc. ... 1
Wellfleet Communications, Inc. ... 6
Weyerhauser ... 82
Whittaker Corp. ... 106
WorldCom ... 1
Xcellenet, Inc. ... 69
Xerox Corp. ... 41
Yaskawa Manufacturing Corp. ... 100
Yankee Group ... 69

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Windows NT hole leaves Web servers vulnerable

By Kim S. Nash

A "feature" in Microsoft Corp.'s Windows NT operating system leaves hastily installed World Wide Web servers — Microsoft's and those of competing vendors — open to attack, the company acknowledged last week.

The problem occurs when users skip some coding steps during Microsoft's detailed installation procedure. In the process, users can unwittingly make their servers vulnerable. Web browser users who know Windows NT can then issue commands to fiddle with file names or delete entire files that live on the Web server.

This isn't a bug, per se, said Dave Malcolm, a product manager at Microsoft in Redmond, Wash. "It's actually a feature of NT" meant to make administration flexible, he explained.

Malcolm said "a friendly hacker" reported the problem to Microsoft last week. He added that he has received no reports of damage caused by the glitch.

He also said complicated Windows NT commands unknown to most users are needed to exploit the security hole.

Fix on the way

A 90K-byte patch to automatically correct the problem upon installation is due to be available for downloading from Microsoft's Web site (http://www.microsoft.com) today. In lieu of the fix, instructions on how to build a workaround have also been posted at the site.

The problem affects other Web server makers whose products run on Windows NT, including Netscape Communications Corp. and Process Software Corp. Microsoft has started to notify these companies and suggest ways to circumvent potential trouble.

Because a fix is on its way, the glitch isn't serious for users, said Ullas Naik, an analyst at First Albany Corp., a Boston consulting firm. However, even as this problem is corrected, other security gaps are bound to show up as Internet technology matures, he said.

"We saw the same thing with early client/server products," Naik said.

Even so, security in general is a big issue with users. "It's very definitely something that we need to take into account for external Web sites and internal Web sites," said John Parkinson, director of emerging technologies research at Ernst & Young in Los Calinas, Texas.

Frame relay

CONTINUED FROM PAGE 1

speed frame relay as a custom offering for several months to Internet access providers and other power users, said product manager Emily Hansen.

Internet access provider UUNet Technologies, Inc. is using fast frame to carry traffic for The Microsoft Network, said Dave Boast, vice president of the company's Microsoft division.

"It was a speed-to-market issue more than anything," Boast said. WorldCom was "ready with the bandwidth we needed at the time."

Boast said UUNet had to quickly build a dial-up network to connect Microsoft Network users to the Internet. He was looking for a service that spanned the U.S. and provided higher bandwidth than conventional frame relay.

Tom Nolle, an analyst at CIMI Corp. in Voorhees, N.J., isn't impressed. "We do not recommend frame relay above T1 bandwidth," Nolle said. Once users have data requirements beyond T1, they should consider ATM because of its far superior quality of service features, he said.

But Rosemary Cochran, an analyst at Vertical Systems Group, Inc. in Dedham, Mass., predicted that fast frame will find a niche as a backbone application for heavy data users who need to relieve network congestion.

Cochran said ATM is still the way to go for users who want broadband services that incorporate video and voice.

Lisa Henderson, an analyst at TeleChoice, Inc. in Verona, N.J., argued that high-speed frame has advantages because users can avoid buying multiple T1 ports if they want an all-frame network, and they can put off the "forklift upgrade to ATM."

"There are still lots of customers uncomfortable with ATM," Henderson said. "The technology has to prove itself over time." On the other hand, frame relay is developing a reputation as a tried-and-true technology, she said.

AT&T Corp., MCI Communications Corp. and Sprint Corp. offer frame relay up to T1 speeds and haven't announced specific plans to add high-speed variations.

Net Notes faithful say they will find a way

CONTINUED FROM PAGE 1

Lane, president of the company.

Outsourcing the Notes infrastructure to services such as Network Notes cuts out costs that users such as Lane now have to bear.

To establish their own Notes infrastructure, users must purchase and install Notes servers, build a network and hire high-priced Notes administrators and developers to maintain and build Notes applications.

Among the options available to users are other third-party providers that have inked deals to offer on-line Notes services. Lotus officials said they spoke with those third-party vendors, which are still on track to unveil their services in the next year.

What it was

AT&T's highly touted Network Notes was an on-line service that let users deploy Lotus Development Corp. groupware applications on AT&T's network. It failed because the market saw it as another proprietary on-line service in a world that is falling hard for cheap and easy access to the Internet and World Wide Web, analysts and users said.

Also contributing to the service's failure were the lack of specific Notes applications; a fuzzy marketing strategy that focused on the network itself and not on how it could benefit users; and a confusing pricing structure.

"They were torpedoed by their own marketing message," said Ian Campbell, an analyst at International Data Corp. in Framingham, Mass.

AT&T's convoluted pricing structure for Network Notes was out of touch with user needs, too, Campbell said.

After AT&T started developing the network last year, "Notes was programmed to be more open, and the marketplace moved very fast to a more open environment," said Gary Hickox, vice president of business development at AT&T.

"I think they [AT&T] see everything going to more of a Web solution, and I don't disagree with it. We are headed in that direction," Lane said.

'Not about Notes'

Lotus was quick to defend its software. "This is not about Notes at all. It is about network architecture," said Larry Moore, senior vice president for Lotus' interenterprise communication group.

AT&T's abandonment of Network Notes adds to the perception among some that the Internet is a better groupware alternative, though Notes 4.0's Web integration makes combining the technologies much easier. Notes 4.0 lets users create and administer Web pages, includes a Web browser and lets users with Web browsers access Notes documents on Notes servers.

"It doesn't surprise me at all," said Peter Bernstein, president of Infonautics, a consultancy in Ramsey, N.J. "Despite vendors' trying to keep to proprietary solutions for intranet applications, the Web is better."

The good news for Lotus is that the list of providers that inked deals after AT&T failed to deliver on-line Notes services — including BT, US West Communications, Inc., WorldCom and CompuServe, Inc. — are sticking to their plans.

In the offing

They will offer Notes and Internet access and will take advantage of Notes 4.0's Web integration features (see chart).

This will let users access the Internet and secure Notes business applications from one entry point. AT&T said it couldn't convert its proprietary Notes network to include Internet access until later this year and would have lost money on the project.

Network Notes (Discontinued)

AT&T is giving up on Network Notes, but the competition sticking to our model, users

On-line Notes vendors plan to do the following:

- Combine Notes access with Internet access.
- Take advantage of Notes 4.0's Web integration features.
- Provide specific Notes applications.

Real estate company uses Network Notes for transactions. See page 71.

AT&T built it; they didn't come

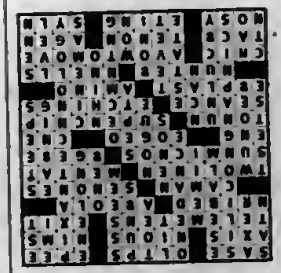
AT&T's problem was that it didn't exactly encourage users to come running to its service.

AT&T introduced nine early users of Network Notes when it announced the service last August, but since then it has kept mum about the total number of users or new subscribers. analysts say AT&T never signed up any other large accounts.

The Basking Ridge, N.J., company won't leave what users it has in the lurch, however. AT&T is providing a transition manager to each customer to help them choose how to proceed with their Notes networking strategy.

— Tim Ouellette

Solutions to this week's crossword puzzle

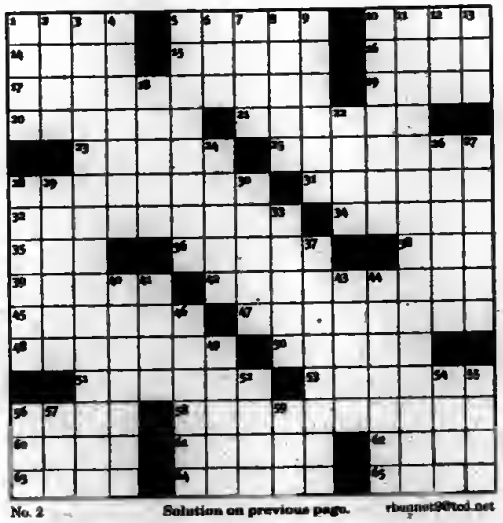


Silicon Graphics, Fiber Technology, Sun Microsystems and Supercomputing are the key elements of this week's puzzle.

Toys in the machine

Computerword crossword by Rick Bennett

CW editor Paul Gillin can't stop raving about the movie *Toy Story*. Are you up on the technology used to make this remarkable movie?



No. 2 Solution on previous page. rbennett@tcd.net

ACROSS

1 What to enclose with your mss.
5 Ingres/Oracle/Sybase competition, abbr.
10 Fencing foil
14 Allies' foe
15 Harmo or inge follower
16 Edges
17 What Galileo does with data
19 Program branch point
20 Paid for the order
21 Part of the iris around the pupil
23 Islands of banking wheeling and dealing
25 Spanish men
28 Dual-purpose telephone
31 Top advisor in sci-fi novel *Dune*
32 A "farm" of these rendered TOY STORY
34 First init. and name of *Pretty Woman* star
35 CASE word, for short
36 What AOL did to CompuServe, with out
38 Mate or denza preceder
39 Steve Young threat, for short
42 Motorola and Intel goal
45 Medium's milieu
47 "Want to see my –?;" come-on line
48 Ultimate mfg. technology for shoe repair?
50 Acid that forms proteins
51 One who injures
53 Rings solemnly
56 Stylish
58 Set a relocation goal
60 Bring a vessel into the wind
61 Projection into a mortice
62 Substance that causes ripening
63 Flushed
64 Jack or rock follower
65 Spreadsheet data format, for short

DOWN

1 Choir voices, abbr.
2 Person doing the firing
3 TOY STORY animation engine
4 Netherlands ointment?
5 GI's USO request
6 Coll. course
7 Unit of New Guinea currency
8 Sounds from a cat
9 Draft org. memory buy?
10 Soon
11 It made TOY STORY possible
12 British entertainment giant inits.
13 Approximately, abbr.
18 SIMM slot on motherboard
22 A real piece of work!
24 Bill Gates wanna-bes?
26 Jabra telephone tech., slang
27 Soaks, as tea bag
28 South American fly
29 – kind; child prodigy, Ger.
30 Rascal
33 A thin tissue membrane
37 Maynard dept.
40 Fortuitousness-challenged
41 Fed. weather org.
43 PLATINUM technology mascot
44 TOY STORY vendors
46 Word with fifth or planning
49 Fourth month in Jewish calendar
52 Rice-a- —; "San Francisco Treat"
54 On an even keel, abbr.
55 Ber follower; violent, crazy
56 Modem signal, abbr.
57 Unit of Vietnamese currency
59 Prevailed

For questions or comments, contact the author at rbennett@tcd.net.

Inside Lines

Netscape may slash prices

Netscape is likely to reduce the prices of its Commerce Server and Communications Server at its first user and developer show this week in San Francisco, sources said. Commerce Server costs $1,295 and could be priced at less than $500, one source said. "I wonder what kind of upgrade they'll offer customers who paid four figures for Commerce Server?" he asked.

What would Miss Manners say?

Here's what someone at Novell did to Microsoft executives: rescinded all but 10 invitations to the annual Novell Brainshare conference in Salt Lake City planned for the week of March 18. In past years, Microsoft was allowed to send an unlimited number of attendees to the technical conference. Novell had "no comment" last week, and Microsoft executives said they were mystified.

Start me up

Promising start-up Xylan will ship FDDI modules for its midrange and high-end OmniSwitch LAN switching hubs. The modules will let IS managers eliminate the congestion on their FDDI backbone networks. A pair of modules can support one or two ports, while another one can support four or eight ports.

Holding pattern

Former Lotus chieftain Jim Manzi was spotted in the Pittsburgh airport last Wednesday night reading *Wired* and waiting out a flight delay. Manzi, now head of Industry.Net in Pittsburgh, said he is expanding a Notes installation "by personal fiat" to cover the company's 160 employees. Asked whether the purchase would make him popular at Lotus parent company IBM, Manzi shrugged and said, "Oh, I don't know about that."

Bambi died for our 'net sins

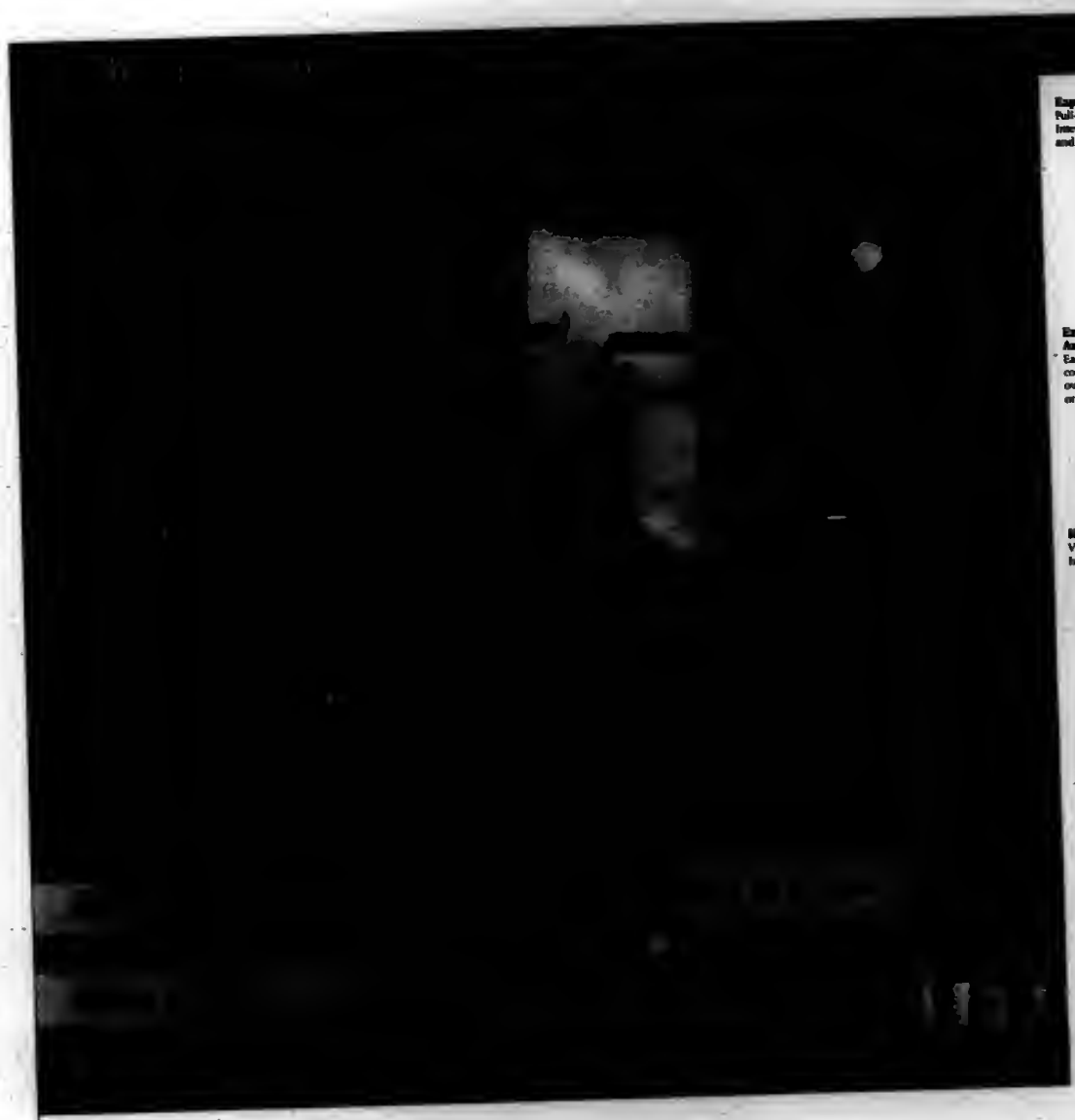
Animal rights advocates who search the Web for news about People for the Ethical Treatment of Animals may choke on their tofu when they link to www.peta.org. They will discover People Eating Tasty Animals, "a resource for those who enjoy eating meat, wearing fur and leather, hunting and the fruits of scientific research." The 4-month-old experiment has evolved into participatory political satire with hot links to sites for taxidermists, hunting safaris and groups such as the National Pork Producers Council, all fueled by hate mail and wry encouragement. Of course, a dispute over registration of the peta.org domain name rages.

How about a Notes videophone?

Some industry wags were surprised that AT&T bailed out of its Network Notes service after less than a year of commercial availability, especially given its reputation for pushing dead-end products longer than needed. "These are the same people who have been flogging the videophone for the last 25 years," observed Eric Arnum, editor of "Electronic Mail & Messaging Systems," a newsletter in Washington.

It may happen only every four years, but leap year means big doings! In recent weeks, the electronic lines have been buzzing over a prank message warning that the Internet must be shut down for 24 hours each leap year for cleaning. Users were gravely warned to refrain from connecting any computer to the 'net at all during cleaning day, when "five powerful Internet-crawling robots situated around the world will search the internet [sic] and delete any data they find." Yikes! The message was widely distributed over Usenet, E-mail and the on-line services. Meanwhile, a grass-roots effort to protest censorship on the Internet used Feb. 29 day to bombard the White House mail server. A chain letter containing a copy of the Bill of Rights sought action by more than 2 million recipients. The goal was for participants forwarding the protest missive to President@Whitehouse.gov to "contribute to either one huge petition for freedom, or else lead to a crash of the whitehouse server." To get in touch with Computerworld *about news items or tips, call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Patricia Keefe can be reached by phone at (508) 820-8183 or via the Internet at tish_keefe@cw.com.*

The 5th Wave by Rich Tennant



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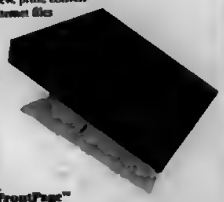

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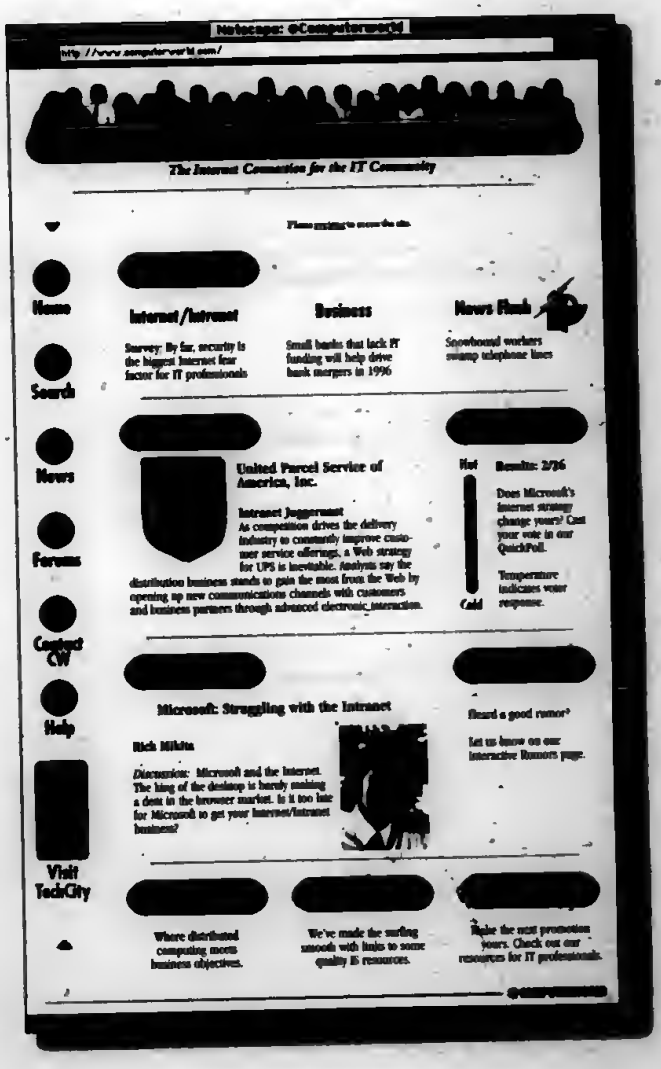

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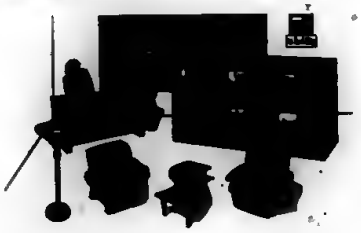

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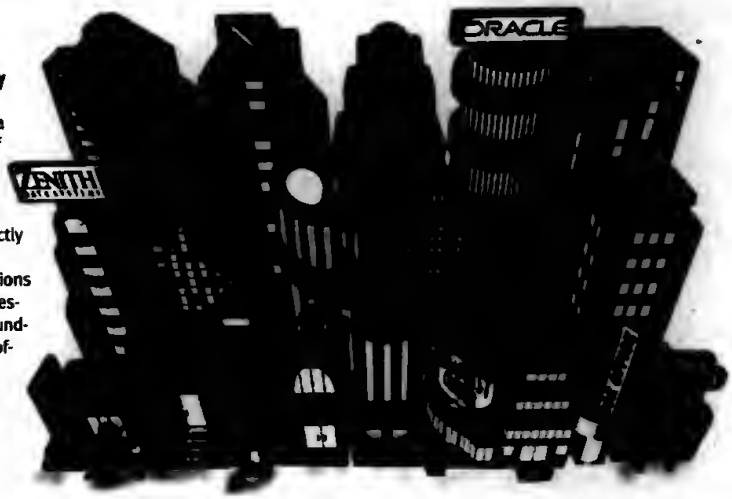

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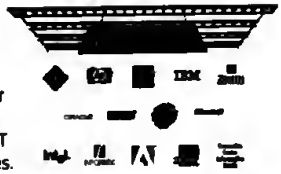

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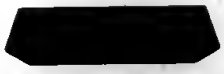

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